

THE IRON AGE

THURSDAY, JULY 11, 1901.

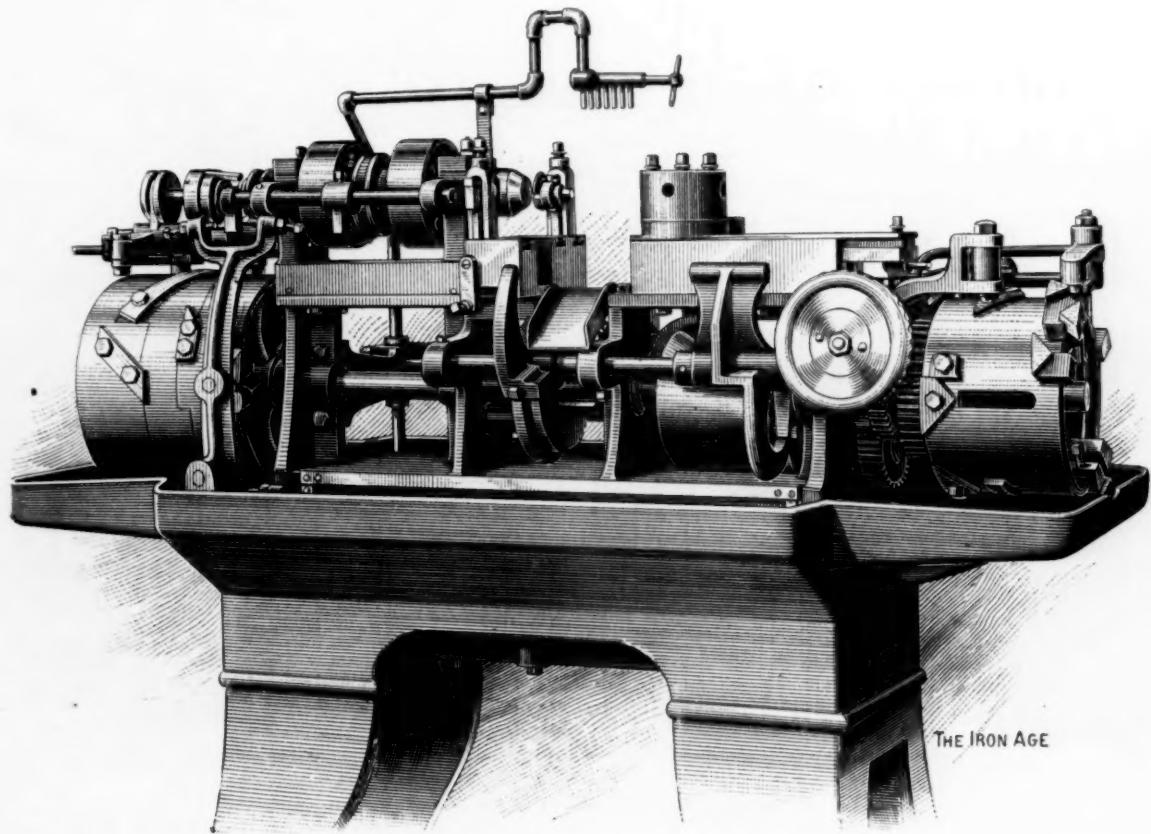
The Sittman Screw Machine.

A screw machine embodying many new and valuable features, the invention of Gustav Sittman, is now being placed on the market by Sittman & Pitt of State street and Boerum place, Brooklyn. One of its principal characteristics is the improved method of feeding the tools to the work in accordance with the character of the work to be performed.

It is designed on the lines of the old Spencer machine, which is largely in use at the present day for the rapid production of screws, fancy turned knobs, studs, &c., from the bar or tube, of any metal. The drawback to the old style in more general use is the recamming for

ing the tools and having a working surface of such form that, in conjunction with an adjustable lever, will cause the turret to advance to the work at a speed controlled by that portion of the cam with which the lever contacts. Provision is made for shifting this lever longitudinally in relation to the cam, and for holding it in any required position to produce the desired feeding speed of the tool. Means are also furnished for causing the turret to return from the work at a speed relatively faster than the speed of the tool toward the work in order to save time during the field travel of the turret.

There are also improvements in the device that operates with the turret. Also in the device for the cross cut of the stock, in the device for operating the stock



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the different operations of the turret and cross slide tools, each different piece of work requiring a special camming, which may take from one to three days to make the cams and bolt the same to the cam wheels. Even then it is seldom performed to the entire satisfaction of the experienced man required to do this work. The result is that the machine is generally allowed to run even at a loss of output rather than go to the time and expense of recamming; but with the new machine the cams are permanent parts of the machine, are self contained and only require the aid of a wrench and a few minutes' time to get the various speeds of feed for the turret and cross slide tools that the different operations performed on the piece of work require. There are also many new features in this machine which make it unique, not only for the production of small quantities of any particular piece, but also for the rapid and economical production of work, as any desired feed can be readily obtained on each and all of the tools operated.

The turret is reciprocated by means of a cam of novel contour, arranged to rotate at a constant speed for feed-

holding chuck, and for rotating the latter and also in many of the details.

The accompanying photographs and drawings show all the main points of the machine.

The Turret.

All the parts of the turret are carried upon the single frame A. The tool holder or turret B, which, of course, may be of any desired form, is mounted upon a slide, C, carried by a guide, D, and moved toward or from the work holder E. The guide is made adjustable toward or from the chuck in order to accommodate different lengths of stock or work projecting from the chuck. This also enables the tools to be held closely to the turret to reduce vibration which would occur if the tools were adjusted outwardly from the turret to accommodate short lengths of stock, and it also enables the turret to be set further away from the chuck so that longer lengths of stock can extend from the latter.

The method of reciprocating the slide is illustrated in Figs. 2 and 3. The rack F, shown by a dotted line in Fig. 2, is secured to the inside of the slide C, and engag-

ing with this rack is a pinion, G, carried by the guide D. A transversely disposed rack, H, is placed in bearings in the guide so as to reciprocate in mesh with the pinion G, the ends of this rack projecting from opposite sides of the guide. Thus as the rack is reciprocated the pinion will transmit forward and backward motion to the slide to move the turret correspondingly.

The following method is adopted for bringing the turret tools in line with the work and for holding the turret in the working position. Fig. 6 shows the turret formed with a depending stem passing through a conical block, I, to which it is secured by screws. This block fits in a conical bore in the slide C, so that while it is firmly held to the slide against tipping it is free to rotate properly on its vertical axis. A ratchet wheel, J, is secured to the lower end of the stem and is engaged by dogs car-

as the turret is fed toward the work the pin will pass beyond and in front of the latch, and on the return movement of the turret the pin will encounter the beveled face of the latch and will ride up on this face, thereby withdrawing the bar from engagement with the turret, while the pin M will remain in engagement with the outer surface of the latch a sufficient time to enable the ratchet J and its dog to rotate the turret one step, when the pin M will slip from the latch and permit the bar to enter the aperture in the turret.

Cam for Feeding the Turret.

The cam which is intended to operate the devices acting upon the rack H is of such shape, as indicated in Figs. 8 to 11, that the turret will be fed with a speed that accords with the cam surface upon which the operating

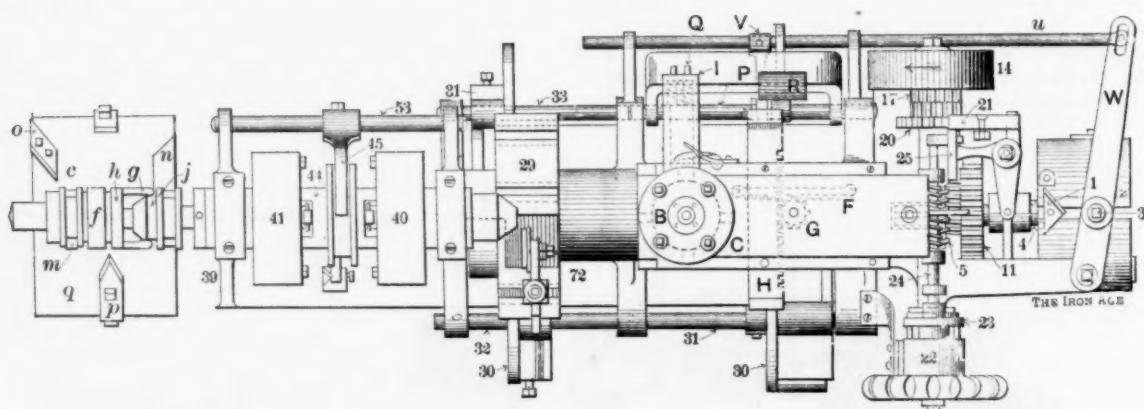


Fig. 2.—Plan.

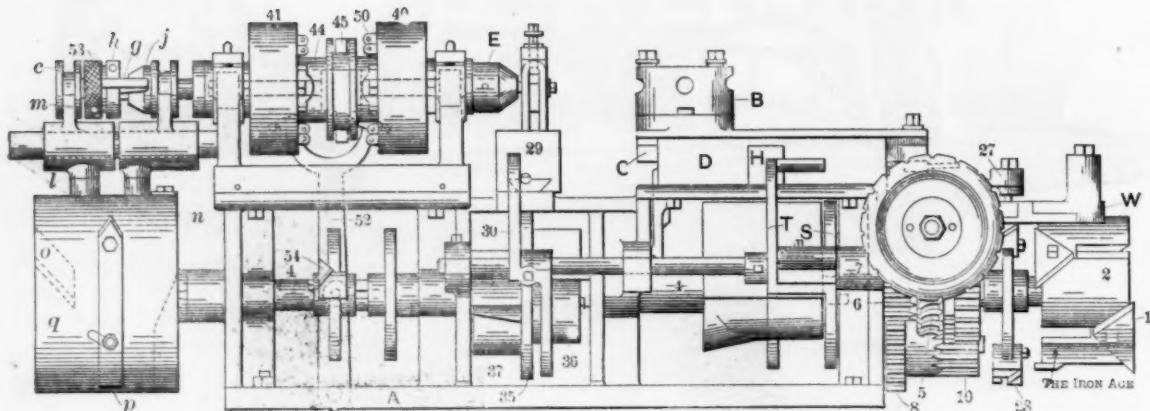


Fig. 3.—Elevation of Fig. 2.

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ried by the guide and provided with a spring to press it toward the ratchet. The position of the ratchet and dog is such that when the slide is moved toward the work the ratchet will slip past the pin carried by the dog, when the spring will push the pin into the path of a tooth of the ratchet, and when the slide is moved back from the work the pin will engage the ratchet so that a continued movement of the slide will cause the ratchet to rotate the turret one step to bring another tool in line with the work.

The same drawing also shows the manner of locking the turret in its operative position. The sliding bar K is carried in an extension, L, projecting from the slide and being forced toward the turret by the spring, the tension of which is adjusted by the screw shown. This bar has the pin M depending through a slot in the extension L. The inner end of the bar is arranged to pass through apertures in the sides of the turret for holding the latter in position.

The pin M is adapted to withdraw the bar from the turret, and in order to accomplish this a latch is pivoted to the side of the guide. The arrangement is such that

devices are in contact. During the feeding of the tool to the work the cam rotates at a constant speed and it is therefore not necessary that the cam should be operated at different speeds in accordance with the character of different tools or work. In this connection there is also provided means for moving the rack H to return the turret from the work, and these mechanisms are intended to return the turret at a speed increased over that of the feeding movement so as to economize time. This cam is mounted so as to rotate freely upon a longitudinal shaft journaled in the main frame. The cam has a surface, N, which is substantially radial and rectangular forming an edge, N², extending substantially parallel with the longitudinal axis of the cam. From this edge the working surface N³ is formed on a gradual inward curve extending at one end, N⁴, more than half way around the axis of the cam, and at the other end less than that distance, and the edge N⁵ of the working surface opposite the edge N² extends in a curve or spiral direction around the axis of the cam.

By this means the distance from the edge N² peripherally of the cam along the working face to N³ varies

at all points longitudinally to the cam, or in other words, the working surface is of a decreasing circumstantial extent from one end to the other. The surface N^2 furthermore tapers from the end N^1 to the other end, notwithstanding that the edge N^2 is substantially parallel with the axis of the cam. The edge N^2 is where the work begins, or in other words, is where a lever to be moved is presented to the working surface, and it will be understood that as the cam rotates it will move this lever outwardly at a speed proportioned to the position of the lever longitudinally on the face of the cam, while the cam rotates at a constant speed. In order to bring the parts to be operated by the cam to the edge wherever desired along the cam, the cam is provided with a concentric surface, N^3 , which terminates in a rectangular

tudinal face of sufficient length to permit the rack to be adjusted longitudinally of the machine while remaining in line with the finger as indicated in Figs. 2, 3 and 6.

This adjustment of the rack would occur when the guide is adjusted from or toward the work, as before stated. The outer surface of the rocking arm is of sufficient length to enable the upper end of the lever O to be adjusted lengthwise of the arm while remaining in operative position relative to the arm.

When the cam rotates in the direction of the arrow, in Fig. 6, the end of the lever passes into the space between the spaces of the cam and will first engage the face N^1 , and will then ride up the concentric surface N^2 , and will remain in contact therewith until the edge of the cam engages the lever, whereupon the latter will ride up on

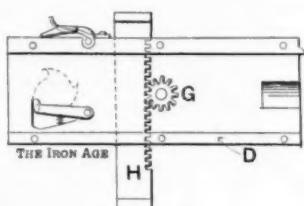


Fig. 4.—Plan Turret Carrying Guide.

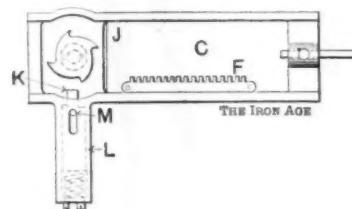


Fig. 5.—Inverted Plan of Turret Slide.

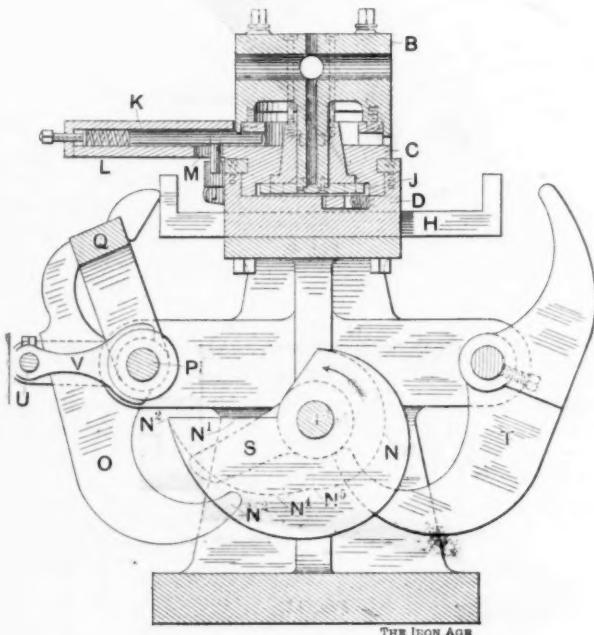


Fig. 6.—Cross Section through Turret.

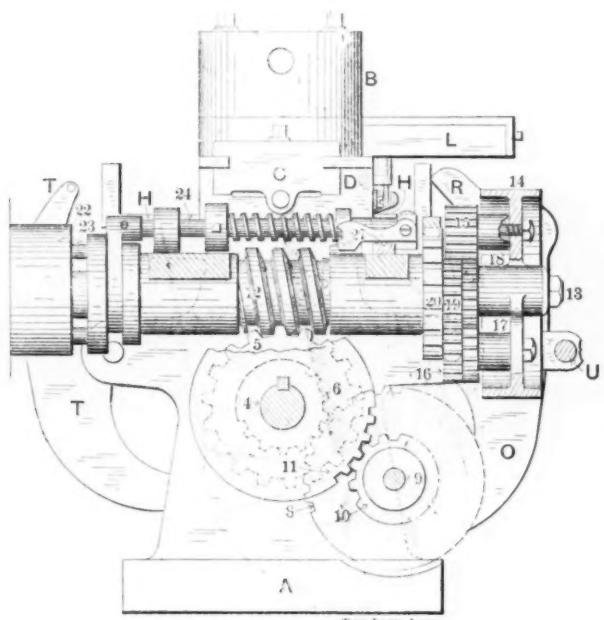


Fig. 7.—Section through Cam Operating Mechanism.

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radial surface, N' , extending lengthwise of the cam opposite the edge, as indicated in Fig. 8.

The spiral edge N^2 of the working face of the cam coincides with the corresponding edge of the concentric surface, which surface when approaching the lever enables the latter to rise. Thus the lever may remain in contact with this surface until brought into engagement with the working face of the cam N^3 at the edge, whereupon the lever will ride up on this surface. This concentric surface therefore is a guide to enable the lever to readily engage the main working surface of the cam without injury.

As previously stated, this cam is used to cause the rack to feed the turret to the work and to accomplish this there is a lever, O , hung on a shaft, P , supported in bearings in the frame extending longitudinally. This lever bears against the outer surface of the rocking arm Q , Fig. 6, supported by the shaft P and arranged to operate upon the rack to push the latter transversely of the guide. The rocking arm is provided with a finger, R , engaging the outer end of the rack and having a longi-

this surface and will be gradually tilted until the cam has passed under the lever at the edge of N^2 . The lever will then slip off the cam into the space between the cam surfaces.

Thus as the lever is tilted it will act upon the rocking arm Q and cause it to push the rack H transversely, whereby the pinion G and rack F will cause the turret to advance to the work. During the time that the lever O is not upon the surface N^3 the cam may be moved at an increased speed, and during such time the rack is moved back to withdraw the turret from the work. This last mentioned operation is accomplished as follows: At one end of the cam is a finger, S , Figs. 3 and 10, adapted to engage the rocking lever T hung upon a shaft supported in the frame and held from traveling along this shaft. The upper end of the lever engages one end of the rack H , whereby as the finger S meets the lever T it will cause the latter to push the rack, thereby withdrawing the turret from the work.

To regulate the feed speed of the tool to the work the lever O may be moved longitudinally and held in any

position. For this purpose a shafting rod, U, is carried in bearings on the frame and provided with a formed arm, B, Fig. 2, that engages a groove in the hub of the lever O, whereby this lever can rock, and yet when the rod U is adjusted longitudinally the lever will be correspondingly shifted in position.

The rod U is jointed to a lever, W, provided with a pin working in a slot in the lever which is pivoted on a support carried by the frame. This lever is acted upon by adjustable cams 1, on a cam wheel, 2, which is carried

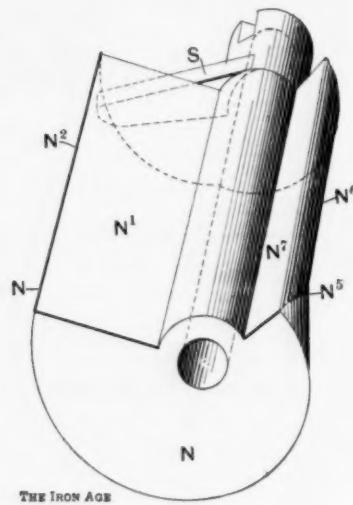


Fig. 8.

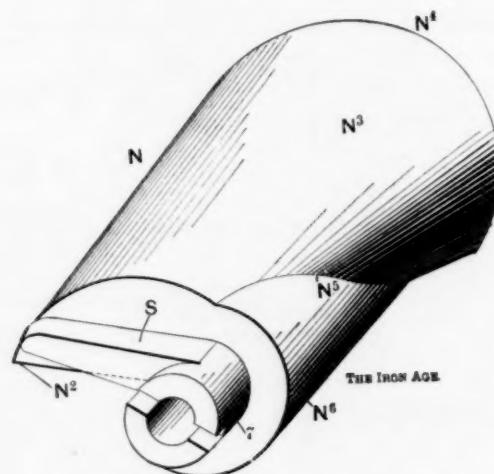


Fig. 9.

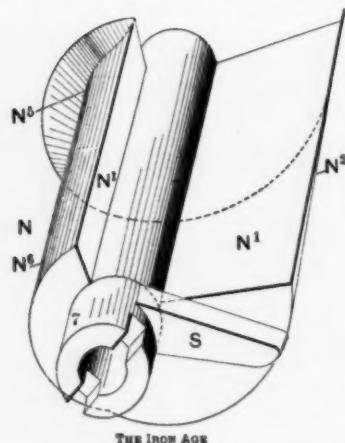


Fig. 10.

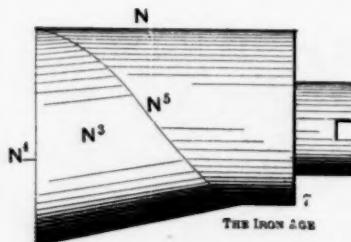


Fig. 11.

Different Views of Main Cam.

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by the shaft 4. The lever carries a pin, 3, arranged to be engaged by the cams.

From this it will be understood that by adjusting the cams to the proper positions the lever can be caused to rock to a greater or less extent, thereby to shift the rod U and lever O more or less lengthwise of the cam N in either direction. After the lever has been so shifted it will remain in its new position during the time that the cam operates to feed the turret to the work.

From what has been said it will be apparent that if the lever O bears upon the cam surface near the end N⁴ the feed of the turret will be relatively slow, owing to the long cam surface that travels under the lever; and as the lever is adjusted near the opposite end of the cam surface the feed speed of the turret will be relatively fast, because of the short cam surface operating upon the lever. Therefore the feeding of the turret will be relatively fast or slow, according to the circumferential length of the cam surface with which the lever engages, the cam meanwhile rotating at constant speed.

the gear 8. This pinion engages with the gear 11 secured to the shaft 4, by which it is rotated. The speed of rotation of this shaft, relative to the speed of rotation of the cam N, may be regulated as desired by substituting other gears having a different ratio of diameters. The worm wheel 5 engages with the worm 12, adapted to be rotated at different speeds, one of which speeds is for rotating the cam N to feed the tool to the work, while the other speed is for returning the tool from the work, and the speed of the shaft 4 will be correspondingly changed as the speed of rotation of the worm wheel 5 is changed.

The worm 12 is mounted to move freely around the shaft 13 upon which the pulley 14, Fig. 7, is secured. This pulley carries a wide face pinion, 15, and two differential pinions, 16, 17, which engage with the differential gears 18, 19, the gear 18 being rigidly connected with the worm and the gear 19 being free to rotate. The ratchet wheel 20 is mounted freely upon the shaft and rigidly connected with the gear 19. A pawl permits the

ratchet and gear 19 to rotate in one direction, but prevents their rotation in the reverse direction. When the pulley rotates in the direction of the arrow in Fig. 2 the pinions 15, 16, 17 acting upon the differential gears will cause the worm to rotate and drive the cam N and its shaft 4 at relatively a low speed, the gear being held by the ratchet and dog. To drive the worm at the same speed as the pulley a clutch is provided to connect the worm direct with its shaft. The hand wheel 22 is secured to the hub of the worm and incloses a disk forming a part of the clutch. The slide member of the clutch 23 engages the hand wheel so that when the clutch members are in engagement the worm will be locked to the shaft. The clutch member 23 is connected with the sliding rod 24, having a spring to hold the clutch parts in engagement, the rod having a latch, 25, to engage the stop to hold the clutch members disengaged. The rocking lever 27 is provided to release the latch at the proper time to cause the clutch members to engage. This lever is rocked by means of the adjustable cams 28 carried by a disk secured to the shaft 4. The arrangement is such that when the rocking surface N^o of the cam N is acting upon the lever O the clutch will be held uncoupled by the latch, the cam 28 and the lever 27 having so adjusted the parts that the cam N and its shaft will be rotated

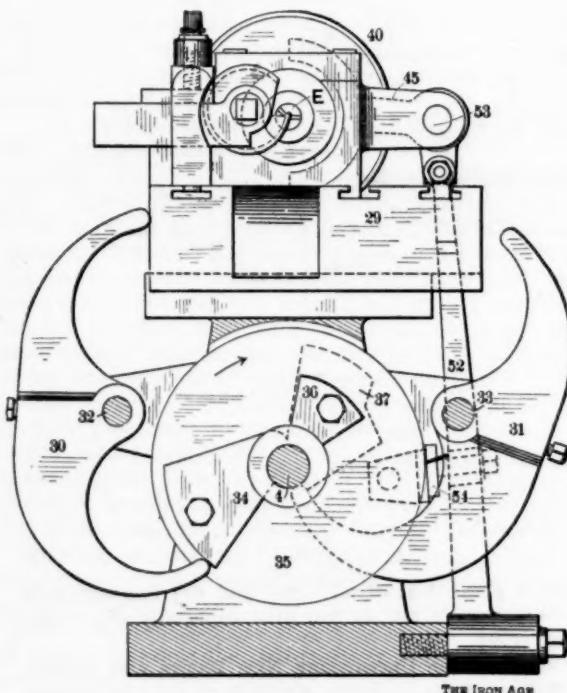


Fig. 12.—Section through Cross Slide.

opposite to that of the first cam, and is arranged to engage the lever 30 for the purpose of moving the slide to a central position after it has been moved by the lever 31. This device moves the slide in a direction opposite to its movement by the lever 30, either to return the tool from the work or to cause another tool to operate on the work.

As these cams are connected with the shaft 4 they will be rotated coincidentally with the operation of the parts that reciprocate the turret and while the two cams may be set in any position desired it will be seen that they will bring the cross cut tools in the proper position ready for operation and retain the tools in that position. When the turret tool has performed its work the cams

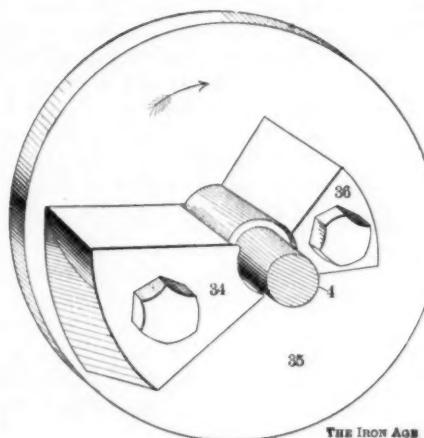


Fig. 13.

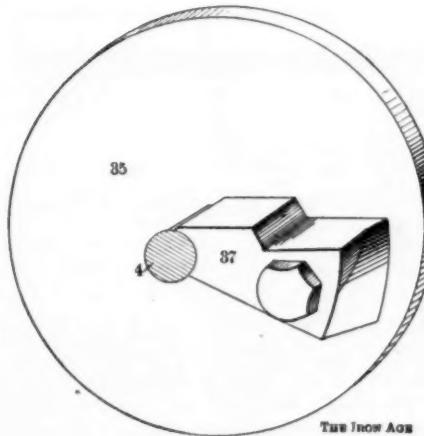


Fig. 14.—Views of Cams Shown in Fig. 12.

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by the pulley 14 at a relatively slow speed to cause the turret to feed to the work.

Cross Cut Feed.

A method of feeding the cross slide at different speeds will be understood from Fig. 12. The cross feed slide 29 is guided in the main frame and is reciprocated transversely through the medium of the levers 30 and 31, and cams of peculiar construction carried by the shaft 4. The first lever is mounted upon the shaft 32, and held from longitudinal movement by a set screw. The lever 31 is mounted upon the shaft 33 and held in like manner. The lever 30 is acted upon by the cam 34, shown detached in Fig. 13, to move the slide crosswise, this cam being secured to the disk 35 attached to the shaft 4. The acting surfaces of both these cams will be understood from the drawings, Figs. 13 and 14.

The speed of the cross feed of the slide by the cam 34 and the lever 30 will be proportioned to the position of the lever against the working face of the cam. The cam 36 is also connected to the disk 35 to project in a direction

will operate the cross slide to cause the tools connected with it to perform any desired operation. The cross slide tools can also be operating on the work at the same time as the turret tools.

Chuck and Work Feed.

The chuck E is attached to the hollow shaft 39, Fig. 15, on which are mounted the loose pulleys 40 and 41. Each pulley is provided with a disk, 42 and 43, connected with the shaft on which is a sliding sleeve, 44, provided with arms projecting from opposite ends and passing through slots in the disks. The sleeve is formed with an annular groove to receive the shifting fork 45. Friction devices are also provided within the pulleys for connecting the shaft 39 with them.

At the right in Fig. 10 the parts 49 and 51 are shown in the operative position whereby the pulley 40 is in frictional connection with the shaft 39, while the friction devices connected with the pulley 41 are not operated, so that this pulley is free to rotate. By sliding the sleeve to the right or left either pulley can be caused to rotate

the shaft, while, when the sleeve is in its central position, both sets of friction devices will be free.

Provision is made for automatically shifting the sleeve by means of a rocking arm, 52, arranged so as to shift the fork 45 along its supporting shaft 53. Adjustments are also provided so that the desired amount of movement can be effected.

The arm 52 is rocked by the cam 54, carried by a disk mounted on the shaft 4. The arm carries a pin so placed as to be engaged by the cams as the shaft 4 rotates, the result being that the arm is arranged to move the slide 44 in either direction along the shaft 39, or to bring it to a central position.

The devices provided for feeding the stock through the chuck and clamping it may be described as follows: The tube *a* is placed within the shaft 39, and has at one end a removable clamp jaw, *b*, to grasp the stock, and at the other end a grooved head, *c*, as shown by Fig. 15. Also, placed within the shaft and surrounding the tube *a* is another tube, *d*, having at one end a clamp jaw, *e*, provided with external beveled faces to co-act with the internal beveled faces of the chuck to grip the stock.

At the opposite end of the shaft is a head, *f*, having abutments, against which the shoulders of the levers 9 bear, these levers being pivoted to a ring, *h*, mounted to

Works, the Beaver Falls Works and the New Castle Works, have been supplied for years by the Edwin Bell Company, nail keg manufacturers, who are located on the South Side, Pittsburgh.

Central Pennsylvania News.

HARRISBURG, PA., July 6, 1901.—A rumor has gained circulation in this place and at Lebanon that the Pennsylvania Steel Company intend to erect a large steel plant at Lebanon, close to the furnaces which they purchased, in connection with the furnaces. At Steelton it was said that nothing was known of the plant, which, if true, would be carried out under the direction of the executive department of the company at Philadelphia.

The end of the first week in July finds the Harrisburg Works well supplied with work and there are good prospects for the fall, many inquiries being made in spite of the season. Shipments during June were very large from all the works about the city and the runs were large in spite of the weather. At the Central Iron & Steel Works there were some record breaking runs made on orders for plates from the great East River Bridge structural work. More steel left the yards of the mill than for many months. The machinery works also

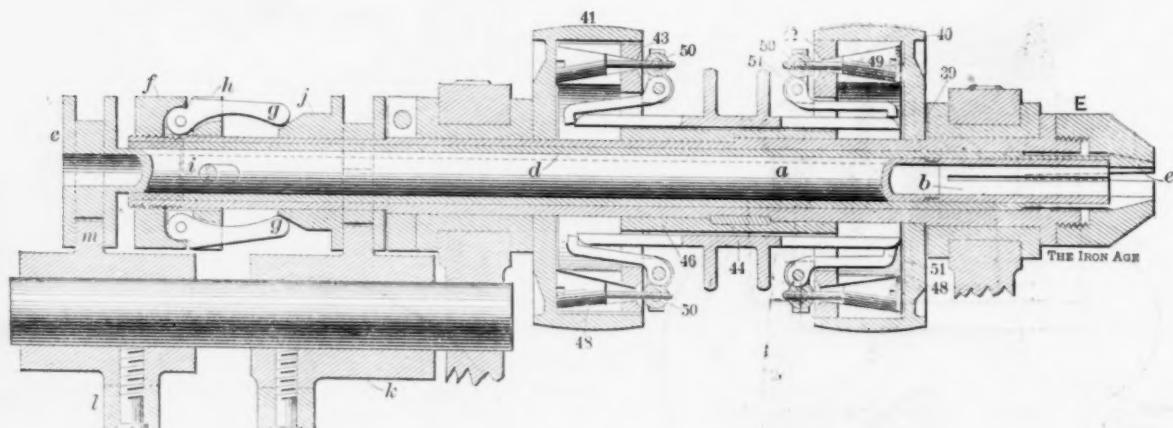


Fig. 15.—Longitudinal Section, Showing Devices for Feeding the Work.

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slide on the shaft. From this ring a pin, *i*, projects through a slot in the shaft and is secured to the tube *d*. When the levers are pressed outwardly their shoulders engage the head *f*, whereby the ring *h* is moved forward and the pin pushes the tube *d* so that its jaw in the chuck grips the stock projecting therefrom. The levers are pressed outwardly by a spool, *j*, having a beveled face, and which is mounted to slide upon the shaft 39. Sliding upon a rod projecting from the frame is a sleeve, *k*, having a fork, *l*, to engage the groove in the spool *j*. Another sleeve, *l*, mounted upon this rod has a fork, *m*, to engage the groove in the head *c*. These sleeves are reciprocated at the proper time by means of the cam wheel upon which are placed the cam pieces *n o p*. The reciprocations of the sleeves *l* and *k* will, at the proper time, allow the jaw *b* to take a new grip on the work, cause the jaw *e* to release the work, permit the jaw *b* to project the work forward from the chuck a proper distance and cause the levers *g* to act with the tube *d* to grip the stock in the chuck.

The American Steel & Wire Company have placed a contract with the Greif Bros. Company of Cleveland for 4,500,000 nail kegs, to be delivered between July 1, 1901, and July 1, 1902. Of this order 500,000 are for export business, the kegs being made with eight bark hoops. The American Steel & Wire Company will use these kegs for the shipment of wire nails from their mills in Ohio, Indiana and Illinois. The supply of nail kegs for their mills in the Pittsburgh district, which consist of the Braddock Works, the Rankin Works, the Oliver

shipped a great deal of material, and the Pennsylvania Steel Works were run on full time, especially the bridge and rail mills.

Next week the Chesapeake Nail Works and Harrisburg Rolling Mills in South Harrisburg will be started, after ten days' idleness for overhauling, and part of the Lalance & Grosjean tin mills will likely go into operation. Other works which have been shut down since Wednesday, because of the Fourth of July holiday, will also start up.

A banker said to-day that the amount of money paid out during June for wages would be very close to the high water mark.

The Carnahan Tin Plate & Sheet Company.—The Carnahan Tin Plate & Sheet Company have taken out a charter with a capital of \$500,000. This concern are building tin plate and sheet mills at Canton, Ohio, the contract for most of the equipment being given to Edward E. Erikson, consulting engineer, at Pittsburgh. The plant will consist of six sheet mills and six tin mills, and there will also be a stamping works. Active work is now going on and the company expect to be in the market with their product in the latter part of this year.

Charles Bond, Philadelphia, Pa., dealer in general machinery supplies, &c., has recently remodeled and refitted his entire store and warerooms. Two additional buildings, 520 and 522 Cuthbert street, have also been acquired and will be used for the manufacture of a new ring oiling adjustable ball and socket bearing, and leather belting.

Free Trade with Porto Rico.

WASHINGTON, D. C., July 9, 1901.—The President within a few days will issue a proclamation inaugurating free trade between the United States and the island of Porto Rico dating from July 25. This action will be taken as the result of a resolution unanimously passed by a joint session of the Porto Rican Assembly, which convened on the 4th inst., and which was in part as follows:

"The Porto Rican Assembly, in extra session, and acting pursuant to the instructions of Congress, does hereby notify the President of the United States that by virtue of the Hollander and other acts it has enacted and put into operation a system of local taxation to meet the necessities of insular government, and it hereby directs that a copy of this joint resolution be presented to the President of the United States, and it requests that Governor Allen deliver the resolution in question to President McKinley, to the end that the proclamation may be made by him, and if it shall seem wise and proper to the President of the United States, the Assembly requests that his proclamation be issued July 25, as that day is being established a legal Porto Rican holiday, to commemorate the anniversary of the coming of the American flag."

The instructions of Congress referred to in the above resolution are contained in the so called Foraker act providing civil government for the island, which took effect May 1, 1900, and which contained the following provision:

"And whenever the Legislative Assembly of Porto Rico shall have enacted and put into operation a system of local taxation to meet the necessities of the Government of Porto Rico by this act established, and shall by resolution duly passed so notify the President, he shall make proclamation thereof, and thereupon all tariff duties on merchandise and articles going into Porto Rico from the United States or coming into the United States from Porto Rico shall cease, and from and after such date all such merchandise and articles shall be entered at the several ports of entry free of duty."

The purpose of the Porto Rican Assembly in seeking to have free trade inaugurated on the 25th inst., is to commemorate the landing in the island of the army of General Miles in the Summer of 1898. Much pressure has been brought to bear upon the President to induce him to postpone action for the ostensible purpose of investigating the financial condition of the island, to determine whether the revenues under the Hollander act will actually be sufficient to justify the abandonment of tariff duties. The real purpose of this movement is to put off as long as possible the free entry of Porto Rican sugar and tobacco. These interests have for several months maintained an extensive bureau in Washington and have deluged public men in both Houses of Congress and in the Departments with arguments designed to show that the free admission from Porto Rico of the products referred to would be a great misfortune. In a pamphlet recently issued the charge is made that free trade with Porto Rico was provided by the Foraker act to forestall criticism for the failure of Congress to ratify the pending reciprocity treaties. The same influences opposing free trade with Porto Rico are also arrayed against a reciprocity treaty with Cuba, and the argument is presented that even if free trade with Hawaii and Porto Rico is wise and prudent, these islands now belong to the United States, and therefore Cuba, which is foreign territory, should not have equal advantages, "else wipe out our tariff laws and have free trade."

The only question which the President might have considered in connection with inaugurating free trade with Porto Rico was whether the Hollander act and other revenue laws of the island will actually produce the necessary receipts to meet the expenses of the island, but on this point Governor Allen recently forwarded to the President a fiscal statement in which he reviewed the situation, and which appears to have been employed by him as the basis of a message which he read to the Porto Rican Assembly on the 4th inst., showing that Porto Rico possesses abun-

dant revenues for its needs without drawing upon customs receipts. This statement is further supported by a special report from Mr. Hollander showing each item of revenue in detail. Under these circumstances the President appears to be quite willing to accept the Porto Rican resolution as correctly describing the situation, and unless something unforeseen should occur his proclamation establishing free trade will be issued as desired by the Assembly. No steps will be taken until the official notification of the action of the Assembly reaches Washington, but it is anticipated that in the course of a few days the State Department will prepare the proclamation and forward it to Canton for the President's signature.

The total exports of the United States to Porto Rico for the ten months ending April 30, 1901, amounted to \$5,611,553, as against \$2,727,118 for the corresponding period ending April 30, 1900, during which the war tariff established by the War Department was paid on all imports into the island. An anomalous condition, however, is to be noted as to exports to Porto Rico of manufactures of iron and steel, for during the ten months ending April 30, 1900, when the relatively high war tariff was assessed on all imports into the island, the shipments of iron and steel from the United States aggregated \$412,928, whereas for the ten months ending April 30, 1901, when the tariff paid was but 15 per cent. of the Dingley rates, the shipments of iron and steel aggregated only \$386,723, a very material falling off, especially in view of the fact that exports of all kinds from the United States to Porto Rico more than doubled during the same period.

Representative Dalzell of Pennsylvania, the ranking Republican member of the Ways and Means Committee, and the recognized representative of the iron and steel industries in the House, in discussing the prospects of free trade with Porto Rico and the negotiation of a reciprocity treaty with Cuba, makes the following statement:

"Of course there is no similarity between our attitude toward Cuba and Porto Rico. We do not owe to Cuba what we owe to Porto Rico. It may be expected, however, that the enjoyment of free trade with the United States by the Porto Ricans will arouse the Cubans to a desire to participate in similar advantages, and hasten the agitation for tariff concessions.

"I do not believe that we need fear the competition of either Cuban or Porto Rican tobacco with our own tobacco. In fact, I am told that the Connecticut growers rather welcome the more extensive admission of tropical tobacco of some kinds, as it furnishes a filler for the home grown leaf wrapper. We raise tobacco in Pennsylvania, but it will not suffer by the admission of Cuban and Porto Rican tobacco any more than would the Virginia and Kentucky plug be hurt by it."

"The difficulties in the way of reciprocity with Cuba are readily apparent. The Cubans will ask a market for their sugar, but the farmers engaged in raising beets and cane and those who turn the raw material into the finished product will insist upon protection. On the other hand, however, there are our own citizens who will want less restricted commercial relations with Cuba. It is not to be expected that the Cubans will admit our machinery, agricultural implements, flour and meal, &c., into their country upon less favorable tariff terms than we give them for their staple products. It is a broad question and will have to be handled skillfully. I think we may expect to find a great deal of sentiment in this country favorable to the generous treatment of the Cubans consistent with our own interests, and pressure will undoubtedly be brought upon Congress to take up the question at the next session if the Cubans are organized."

W. L. C.

Freight traffic of the Bessemer & Lake Erie Railroad, owned by the Carnegie Steel Company, Pittsburgh, is steadily increasing. In June, the tonnage hauled over the road amounted to 651,796 tons, an increase of fully one-third over the greatest record of any previous month. Of the total tonnage hauled by the road, the ore shipments amounted to 442,935 tons, all of which went into the Pittsburgh territory.

A Large Hydraulic Press Operating Valve.*

BY FRANCIS H. STILLMAN, NEW YORK CITY.

The valve shown and described in this paper is believed to be one of the most elaborate ever used to operate the motions of a single hydraulic press. It is evident that the conditions of working which would call for such a valve as shown in Figs. 1 and 2 must be special, and of a complicated nature. The conditions were that of serving quickly a press having cylinders working from six directions, and aggregating about 2500 tons. The time of a complete series of motions, includ-

The motions of this press when doing no work must obviously be a considerable part of the whole, while the motions requiring the heavy pressure are very short. The economy of operating under such conditions is obtained by low and high pressure accumulator service of 150 and 1000 pounds per square inch, augmented by two intensified pressures. These latter are obtained by one variable intensifier working at 2000 pounds and 3000 pounds pressure. The change of pressure obtainable by the latter is secured by locking an intermediate ram either to the high pressure ram or low pressure cylinder.

This press controlling valve is started in motion and stopped and returned to the starting position by means of auxiliary valves, shown by Figs. 3 and 3. One of these

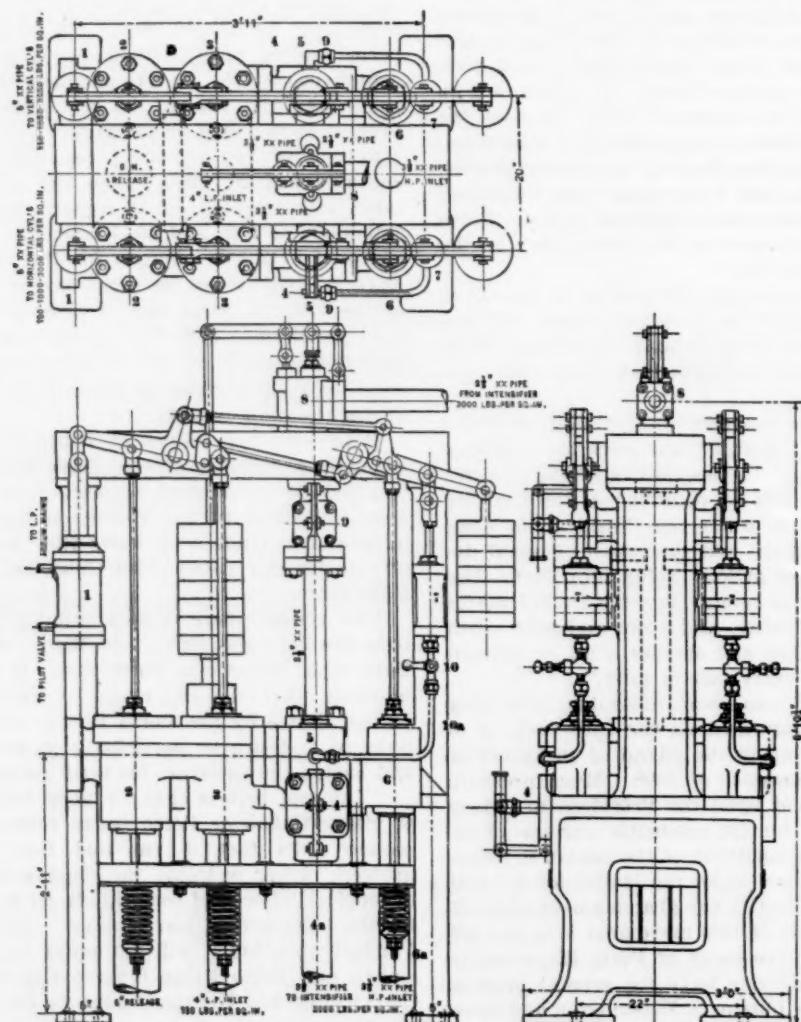


Fig. 1.—Elevations and Plan of Operating Valve.

A LARGE HYDRAULIC PRESS OPERATING VALVE.

ing the time required to put the work in the dies by hand and to remove the work from them, is from one-quarter to one-third of a minute, if such a speed is desired. It is to be understood that in addition to the press cylinders used in doing work, there are automatically operated cylinders for drawing the rams back connected to the accumulator without any intervening valves.

The work to which these presses are devoted is the manufacture of the American Pulley Company's all steel pulley rims, which are put into the press in half circles, which are first gripped and crowned (if so wanted) by four horizontal cylinders. Then two vertical cylinders working in opposite directions turn the edges over—one at right angles, to form the middle stiffening section to which the arms are riveted, the other produces the beaded edge. These are two of the special features of these pulleys.

* Abstract of paper read at the Milwaukee meeting of the American Society of Mechanical Engineers.

valves is placed in connection with each side of the main valve, which are in nearly all respects double, one set governing the vertical and the other the horizontal cylinders. In service a good operator can handle both of these starting valves at practically the same time, as actual working conditions will retard the vertical pair of cylinders enough for the horizontal ones to grip the work before the bending action of the former begins.

These starting valves are, as the cut shows, a disk valve having large spherical metallic seats. These throw the low pressure accumulator service to differential double acting low pressure operating cylinders.

The various valves and cylinders of the main combination and the sizes of pipe connections are as follows, as per Fig. 1:

1. Double acting, low pressure cylinder pipe connection (1a), $\frac{3}{4}$ inch.
2. Low pressure inlet valve (2a), 4 inches.
3. Low pressure release valve (3a), 6 inches.

4. Low pressure intensifier cut out valve (4a), $3\frac{1}{2}$ inches.
 5. Low pressure check valve.
 10. High pressure throttling or cut out valve, $\frac{1}{2}$ inch.
 11. Press connection, 5 inches.
 12. Pilot or auxiliary valve, $\frac{3}{4}$ inch.

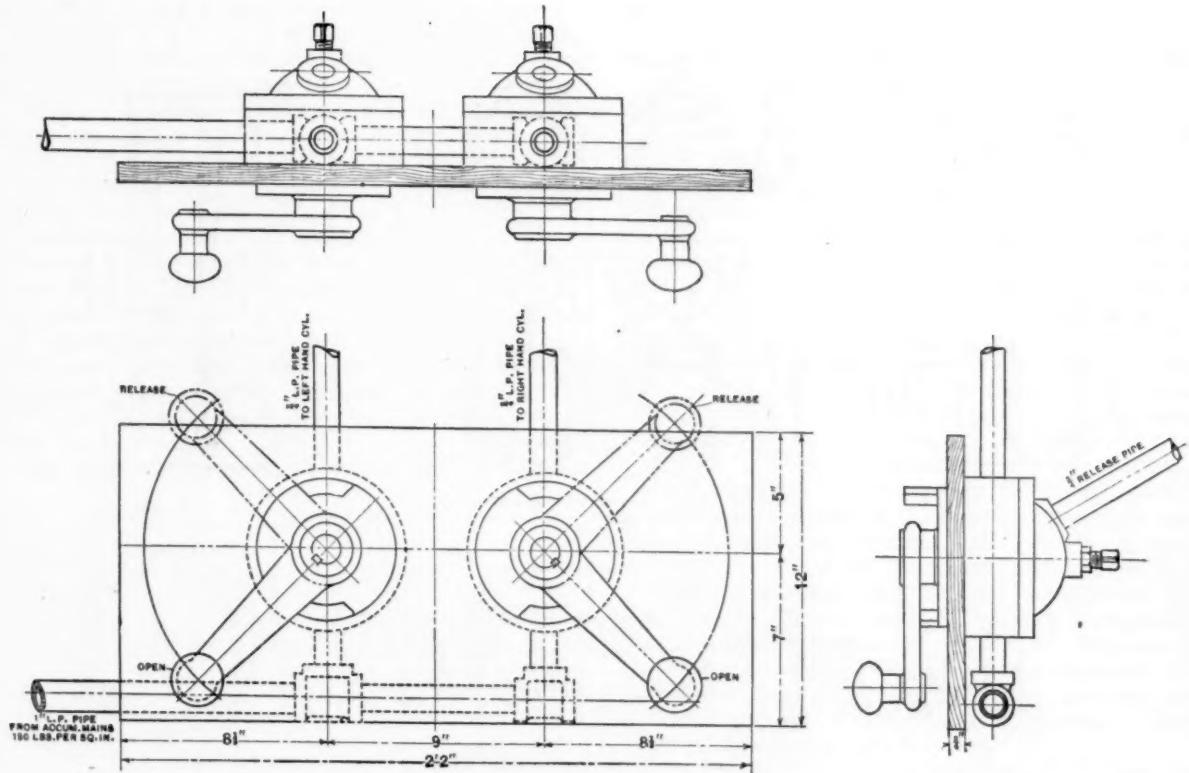


Fig. 2.—Details of Pilot Valve.

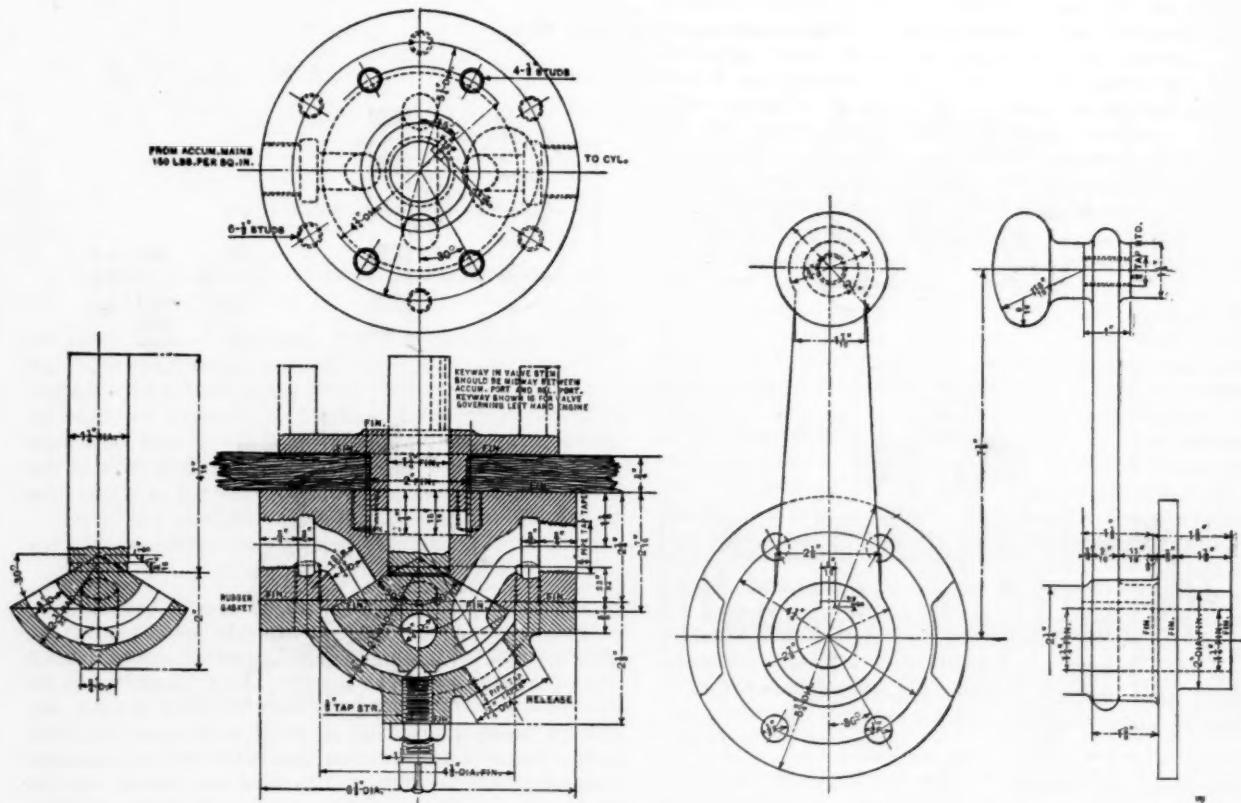


Fig. 3.—Details of Pilot Valve.

A LARGE HYDRAULIC PRESS OPERATING VALVE.

6. High pressure inlet (6a), $3\frac{1}{2}$ inches.
 7. High pressure actuating cylinders, $1\frac{1}{2}$ inches.
 8. High pressure intensifier valve, $2\frac{1}{2}$ inches.
 9. High pressure intensifier cut out valve, $2\frac{1}{2}$ inches.

Operation.

In operating, the low pressure accumulator service is first thrown by the auxiliary valve to the cylinder No. 1. The piston of this cylinder is connected, as shown, by an

interconnected system of bell crank levers to the various valve spindles, and helps to control them. When the piston of the cylinder is pushed up the valve spindle of B is seated and that of No. 2 is raised; this admits the

connection to the cylinder No. 7 being through the valve 10 and pipe 10a leading from the upper part of the check valve No. 5. The opening of the valve No. 6 admits the 1000 pounds intensifier service to the press, and if the

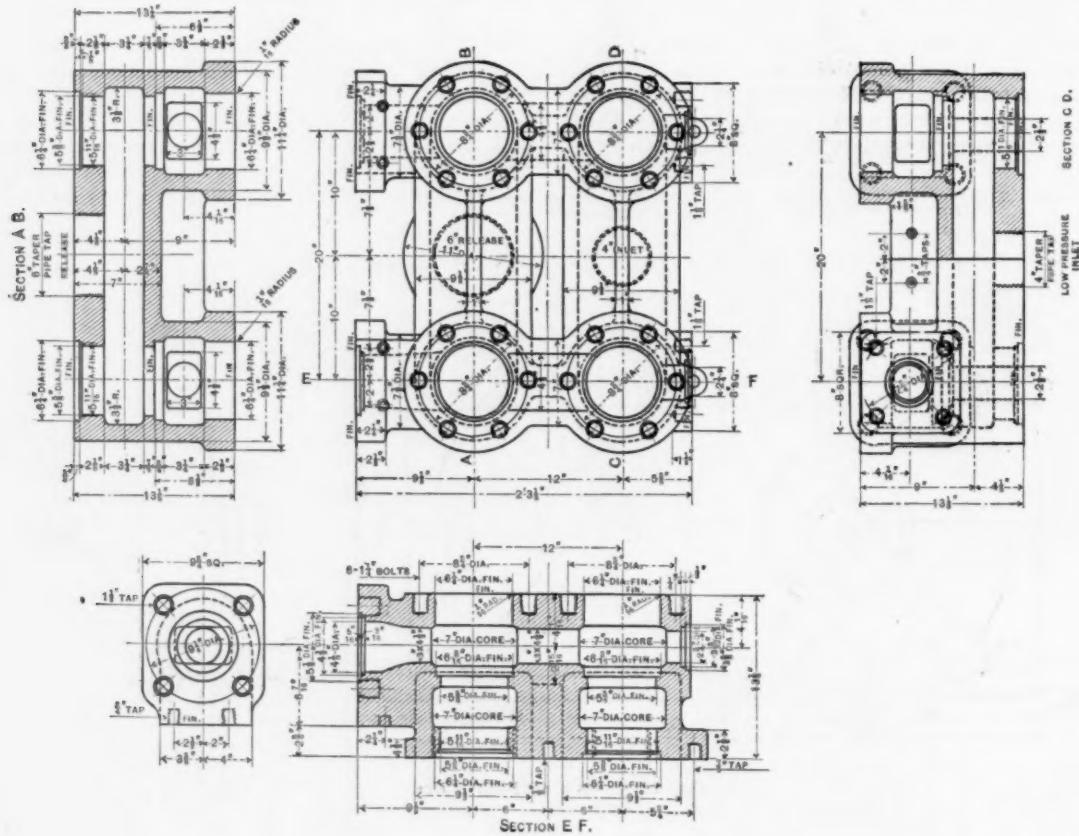


Fig. 4.—Details of Operating Valve.

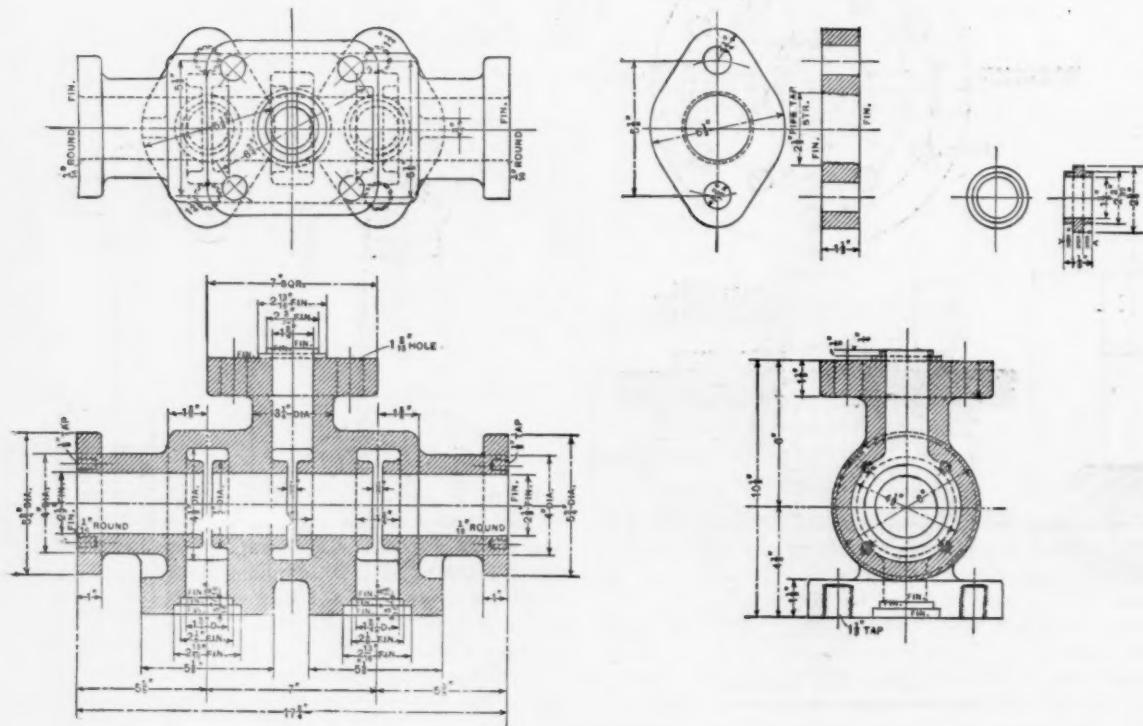


Fig. 5.—Details of Operating Valve.

A LARGE HYDRAULIC PRESS OPERATING VALVE.

low pressure service to the press cylinders. When the low pressure accumulator service has nearly equalized itself the spindle No. 6 is lifted by the cylinder No. 7, which first seats the low pressure spindle No. 2, the

valve No. 9 is opened and the high pressure service is maintained long enough to raise the counterbalancing weight, the high pressure intensifier service will be opened to the press, and this pressure will be either

2000 or 3000 pounds to the square inch, depending upon the position of the intermediate ram of the variable intensifier.

To release the press the auxiliary valve is thrown backward, releasing the fluid in the lower end of the cylinder No. 1, which opens the valve 3.

The series of motions of the valve can be stopped at any time by reversing the auxiliary valve. Should the high pressure intensifier service not be wanted because of light work being in the press, it is cut out entirely by placing the valve piston of No. 9 valve at an intermediate position. Should the work not require the 1000 pounds pressure to the intensifier service, similar action with the valve No. 4 will cut that out.

While the valve as a whole seems complicated, a consideration of the construction of the single spindle valve shows that the details of the main valves are simple. The spindle of the valve is of the same diameter at each end, it being thus completely balanced, except that part of the seat which is in direct metallic contact, and this is counterbalanced by the compression upon the springs shown in Fig. 2. Fig. 4 shows a section of the body of valve No. 9.

The valve chambers of all valves above 2½ inches

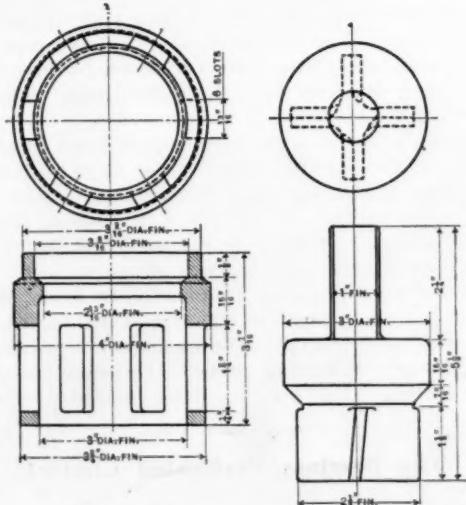


Fig. 6.—Check Valve.

A LARGE HYDRAULIC PRESS OPERATING VALVE.

are made of steel castings. Fig. 5 shows the largest of the three composing the main valve deck, and these are bushed with bronze at the seats. The valve spindles are all made of bronze. A feature of the check valve is shown by Fig. 6, which is the sleeve and valve, which are so arranged that the currents of water through the cage will give a rotary self cleaning motion to the valve.

All of the vertical valves in this combination are of our [Watson-Stillman Company] balanced spindle type.

A Record Month of Sault Traffic.—Sault canal traffic for June was the greatest on record, amounting to 4,519,075 tons, against a little over 4,000,000 for the highest preceding 30 days. For the season to date, however, this year is 1,900,000 tons behind last year, which was 8,673,000 tons. It is liable to be hard to make up this difference in the remaining months of the season. Iron ore has formed the bulk of the traffic of the year, with 4,200,000 net tons in May and June. This is about 65 per cent. of the whole. In June, 1900, iron ore passed through the canals was 2,450,000 gross tons, and for the corresponding month of 1901 it was 2,823,200 gross tons. Of coal, 1,379,000 tons have passed up during the season to date, and of grain and flour reduced to wheat, 22,500,000 bushels have passed down. During the season 49,000,000 pounds of copper have been shipped East. This is to be compared with 84,000,000 pounds for the same period in 1900, and 90,000,000 pounds for the same time in 1899. This shortage is in part due to the continued

winter shipments by all rail of refined copper, and in part to the decrease in production. This decrease, considering the new mills starting, the new mines wheeling into line, and the high price prevailing, as well as the fact that mines are not becoming depleted, is a remarkable condition.

National Steel Company and American Steel Hoop Company Absorbed.

A complete reorganization of the executive departments of the National Steel Company and American Steel Hoop Company was made last week at a meeting of the directors of the concerns, held in New York City. All the old officials have resigned and the new officials elected at the head of these two concerns are also officials of the Carnegie Steel Company. At the meeting last week the following officers were elected for the National Steel Company and the American Steel Hoop Company: W. E. Corey, president Carnegie Company, president; H. P. Bope, first vice-president and general manager sales; W. W. Blackburn, second vice-president and secretary; W. C. McCausland, treasurer; James J. Campbell, assistant secretary and auditor; William R. Conrad, assistant treasurer; John E. Woods, assistant general manager sales; J. P. Kessler, Jr., general agent; James B. McKillips, assistant auditor; F. B. Thompson, assistant auditor; J. H. Blackburn, auditor receipts; F. A. McCune, cashier; John McLeod, assistant to president; H. J. Lindsay, assistant to first vice-president; Ambrose Monell, engineer of tests; D. G. Kerr, ore supply agent; George E. McCague, traffic manager; L. C. Bihler, assistant traffic manager; H. A. Fennerty, purchasing agent; H. P. Howell, credit manager; Charles E. McKillips, special agent.

On Friday, July 5, a special train left New York, containing officials and clerks of the two concerns, which arrived in Pittsburgh Saturday morning. The officials and clerks have been provided with quarters in the Carnegie Building, in Pittsburgh, where, in the future the general offices of the National Steel Company and American Steel Hoop Company will be located. At first it was intended that the names of these two concerns should be dropped and all business carried on under the name of the Carnegie Steel Company. This, however, was changed, and the two concerns will continue to trade under the names of National Steel Company and American Steel Hoop Company, as before. Charles M. Schwab, president of the United States Steel Corporation, has put in effect a system for securing the very best results from the constituent companies.

The general managers of each of the principal departments of the different steel companies have been formed into committees, with a selected chairman, and these committees meet regularly in New York to discuss questions relating to these particular departments. It is said that already the success of the scheme is assured and uniformity in the methods of the various companies has been secured. H. P. Bope, first vice-president and general manager of sales of the Carnegie Company, has been made chairman of the Committee of General Sales Managers. George E. McCague, general freight agent of the Carnegie Company, has been made chairman of the Freight Agents' Committee of the underlying companies, and J. J. Campbell, assistant secretary and auditor of the Carnegie Company, has been made chairman of the Committee of Auditors. It is more than likely that these committee meetings will eventually be held regularly in Pittsburgh.

The American Brake Shoe Company have published for their licensees, among whom are the Sargent Company and the Ramapo Foundry Company, and also for Railway Appliances Company, a limited edition of "Jim Skeever's Object Lessons," by John A. Hill. The book is well known and comment on its importance and value is therefore superfluous. This edition is printed in very attractive style on linen paper, bound in purple linen with gold lettering, and is altogether a very compact and artistic book. It contains about 160 pages and in size is 4 x 10 inches. Less than 300 of these copies are for distribution to customers.

Lake Iron Ore Matters.

DULUTH, MINN., July 8, 1901.—Some of the leading mining men are not looking for any increase in ore receipts at lower lake docks over 1900; indeed, they expect a decrease, and will be surprised if the total for the year reaches 19,000,000 gross tons. "There is a shortage of facilities in lower lake docks," said one of the best posted to-day, "and no shortage of mines and ships. If the ore now being carried down the lakes was in 25 per cent. less ships the total for the season would be as large as under present conditions. Docks there are already full up, and are getting choked very fast. Receipts at Conneaut for June were nearly 600,000 tons, the largest known there, but the docks are crowded and what will they do with the ore after this? If the money that was spent in ships last winter had been put into Lake Erie dock betterments it would have been more to the purpose, but the men that built the ships are not the men that own the docks."

"I have not made any guesses for the season's shipments based on a computation of the mines, but I figure that the ranges will be about as follows for the year: Minnesota ranges 10,000,000 tons, of which the Mesaba will do better than 8,000,000 tons and the Vermillion the rest. The Gogebic is good for about 3,000,000 tons, and the Marquette and Menominee each about as much. The Gogebic last year was 2,875,000 tons, the Marquette 3,457,000 tons and the Menominee 3,261,000 tons. These mines all lost a month in May, and they cannot make it up; I do not say the mines can ship no more than these estimates, but the difficulty will be to get it forward. Some of the biggest concerns of the Marquette range are now stocking from their mines, others are not sending out ore as fast as they had expected."

Lower lake roads are moving off the docks to the furnaces all the ore possible, and are keeping receipts cleaned up as well as they can, and this is the only hope for those anxious for the largest possible shipment.

June shipments were enormous, 870,000 gross tons from the Duluth & Iron Range road alone. It looks as though the shortage for the two months, which was very large a month ago, would be considerably reduced when the dock reports are all in for June. The Sault Canal report shows a heavy shortage for the season, though the shipment of the month was the greatest on record, 2,823,200 gross tons. For the season there have been but 3,870,100 gross tons taken out of Lake Superior, against 5,067,000 to the same date last year. This does not include Escanaba shipments, which show a smaller shortage.

Minnesota shipments for the month were as follows:

	Tons. 1901.	Tons. 1900.	Tons. 1899.
Duluth & Iron Range road.....	\$70,000	624,000	600,000
Duluth, Missabe & Northern.....	630,000	709,000	429,000
Eastern Minnesota.....	340,000	283,000	112,000

There have been some peculiar sales of ore. One high grade coarse ore, a desirable Mesaba Bessemer guaranteed 65 per cent. of iron and 0.025 per cent. of phosphorus, has been sold to the extent of 100,000 tons at \$2.85 a ton. There are fixed charges on this ore of a 20-cent royalty and an actual rail and lake freight of \$1.60. Opposed to this are sales of a non-Bessemer running about 58 per cent. of iron and 0.105 per cent. of phosphorus at \$3.25. Even though standard non-Bessemers of the Menominee are selling for a less price. But conditions opposed to absolute freedom of trade may have had something to do with this higher non-Bessemer price. Good independent old range ores are selling slowly, it is understood.

The outlook is for high freight rates in the fall, and the situation with reference to grain, which promises an enormous crop, and coal, which is not yet moving very freely, indicates that the mines depending on wild tonnage will do well to hustle shipments early. Grain for early fall shipment is now being contracted at Duluth on an equivalent of \$1.12 for ore with advancing tendency. Some of the largest independent vessel interests have notified grain shippers that they will not be able to handle any grain this year, as their boats are tied up

with grain for so long a period as weather will permit ore to be shipped.

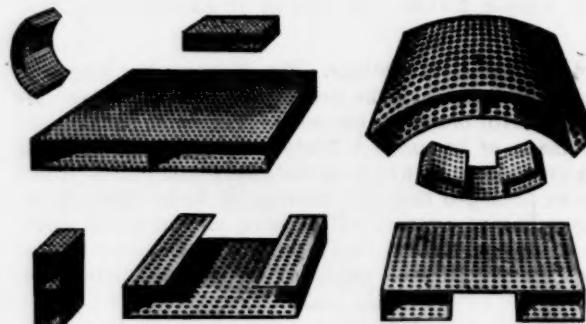
Next Tuesday the iron ore freight rate case comes up in St. Paul before the State Commission on a reopening from the grossly unfairly rendered decision of the Populist commission of last year. The case will be pushed by the roads, it is expected, and they have accumulated a mass of evidence and testimony bearing on the main contentions that will require some time for examination. So far as the Duluth & Iron Range and the Duluth, Missabe & Northern are concerned, the roads are fighting more for a principle than for traffic rates, as by far the greater share of ore hauled over these two lines is owned by connected companies, and the rate charged really means little in the ultimate division of profits. Messrs. Grover, for the Eastern Minnesota, Kellogg and Chandler for the Duluth & Iron Range, and Murray and Cotton for the Duluth, Missabe & Northern, will conduct the appellants' case. The roads are to a considerable extent not common carriers, and the rate is almost interstate, through business lake and rail.

There is a great deal of newspaper talk to the effect that these roads are interested in various legislative plans, and are blocking movements undertaken for the public good. Such talk is injurious, raising up a prejudice where co-operation could be better maintained, and it is very largely untrue. The mining and railroad interests are engaged in the business of mining and transporting ore, and politics forms a decidedly less proportion of their business than the public might think if it believed all it reads.

The old Armenia mine, Menominee range, abandoned by Ferd. Schlesinger in 1890 and not since opened until now, is again hoisting ore. Corrigan, McKinney & Co. are in charge. The ore is very wet, running about 10 per cent. moisture with 59.60 per cent. iron and 0.17 per cent. phosphorus. On the same range the Foxdale is now shipping, which puts Crerar, Clinch & Co. back in the list of mining operators. They had sold their producing properties to the Oliver Company a few months ago. Near Florence a mining property is being opened by Fisher & Osborn that bids fair to be valuable. D. E. W.

The Peerless Perforated Chaplet.

We show in the accompanying cut some forms of the Peerless perforated chaplet made by the Hill & Griffith Company, Cincinnati, Ohio. The company state that



THE PEERLESS PERFORATED CHAPLET.

manufacturers of all classes of goods requiring small cores can readily observe the advantage in using a chaplet of this sort. Through its use not only is time and labor of workmen saved in adjusting the cores to the matrix of the mold, particularly on water backs, radiator and similar castings, but they also claim that it greatly lessens the liability of flaws and defects, and the consequent loss of castings. The chaplets can be made in any size or shape, and are, we understand, already used by a number of prominent foundrymen.

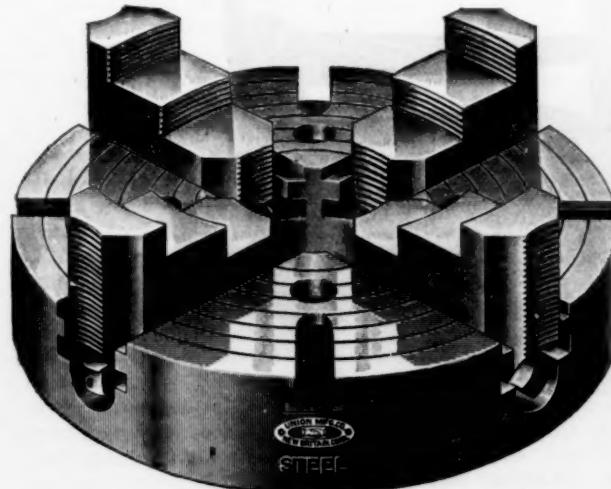
A 75-ton open hearth furnace to use the Talbot process is to be put in at the works of the Hauts Fourneaux de Maubeuge, France.

The Cost of Shop Drawings for Bridge and Structural Work.

BY H. G. TYRELL, C.E., BOSTON, MASS.

The following record of the cost of shop drawings will be found useful and interesting to many who are engaged on bridge and structural work. The record was made in the drafting office of one of the large bridge companies, where there were 38 men employed, including the head draftsman. The squad system was employed, each squad containing from five to eight men. The results given here are from records extending from May 5 to January 30 of the following year, covering altogether a period of 40 weeks. In this time drawings were made of 515 different contracts. The standard size of drawing was 24 x 36 inches, and the total number made was 1693. The wages paid to draftsmen were as follows:

Head draftsman received, per month.....	\$180
5 squad foremen received, each, per month.....	125
2 checkers received, each, per month.....	125
3 checkers received, each, per month.....	100
3 draftsmen received, each, per month.....	100
2 draftsmen received, each, per month.....	90
3 draftsmen received, each, per month.....	80
6 draftsmen received, each, per month.....	75
6 draftsmen received, each, per month.....	60
6 draftsmen received, each, per month.....	50
1 draftsman received, per month.....	40



THE UNION ALL STEEL INDEPENDENT REVERSIBLE JAW CHUCK.

After deducting for the time that men were away on vacations or from other causes, the actual amount paid out for shop drawings in 40 weeks was as follows:

Making drawings.....	\$16,465 = 70 per cent. of total.
Checking drawings.....	4,390 = 18 per cent. of total.
General office expenses.....	2,960 = 12 per cent. of total.

Total cost..... \$23,815

Besides the above, there were 114 sheets of office standards made, costing about \$1100.

The item of general office expense, given above, includes the wages of head draftsman and office boy, as well as tracing cloths and paper, heat, light, rent, insurance and cleaning.

In 40 weeks, then, there were 1693 sheets of drawings made, which cost altogether \$23,815. The average cost per sheet was then about \$14. The above cost includes the making and completing of shop drawings only. Strain sheets, general designs and estimates were all made in another department. Neither does it include the taking of any outdoor measurements, as it was the duty of one man in the contracting department to secure all such data before sending orders into the drafting office.

It was, however, the duty of squad foremen to make designs for machinery or other special work that would require too much time in the contracting department. They must also design structural details, and criticise and change if necessary the general design given them.

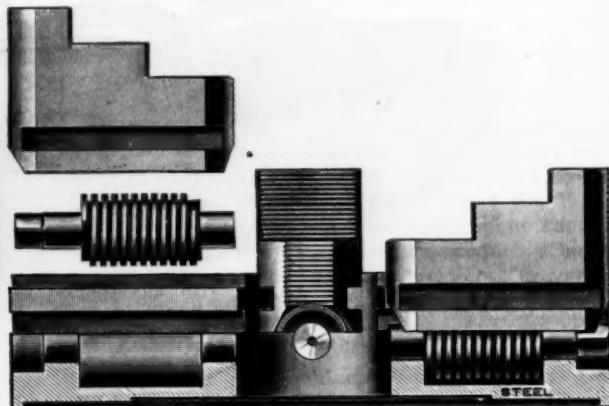
In estimating the cost of shop drawings for new work

it is customary to take the cost at an average of \$2 per ton. This, however, is liable to give results very far from the true. In the case of heavy work where there is much repetition the cost of drawings may go down to from 75 cents to \$1 per ton, while for lighter work, with but few pieces alike, it may run up to from \$3 to \$4 per ton. In order to arrive at a fairly close estimate of the cost of drawings it is best to first approximate the number of sheets that will be required, and then by taking these at, say, \$15 per sheet, we find the total cost.

Further investigation of the records showed that drawings made by the more experienced men, who were paid from \$90 to \$125 per month, cost much less than those made by younger and less experienced draftsmen. While the average cost of drawings for the whole office was about \$14 per sheet, the cost of those made by some of the more experienced men went down to from \$8 to \$10 per sheet. This quite disproved the theory that cheap men meant cheap work. On the contrary, the cheapest work was done by men who knew their business best and consequently were paid the most. The reason for this is largely due to the fact that drawings properly made at first require but very little checking.

The Union All Steel Independent Chuck

The Union Mfg. Company of New Britain, Conn., are introducing a new independent chuck having a steel body. It is designed to meet the demand for an extra strong chuck which will withstand the heaviest strain that can be put upon it. The shell is of steel, having a



tensile strength of 80,000 pounds. The operating screws are nearly twice as large in diameter as in the ordinary independent chuck, thereby giving a wrench bearing in the shell. In consequence of this the jaws are considerably wider than usual. This chuck is made in sizes from 10 to 36 inches, inclusive.

We are indebted to Baker & Co., 408-414 Railroad avenue, Newark, N. J., for a sample of a neat little dating stamp which they are sending out to their customers, also notebook bound in a white celluloid cover, which in addition to information regarding the company's goods, consisting of platinum sheet and wire, has tables of weights and gauges of platinum, also a comparative table of troy, avoirdupois and French weights, tables of specific gravity of various metals, and other useful information. A number of blank pages are left for notes.

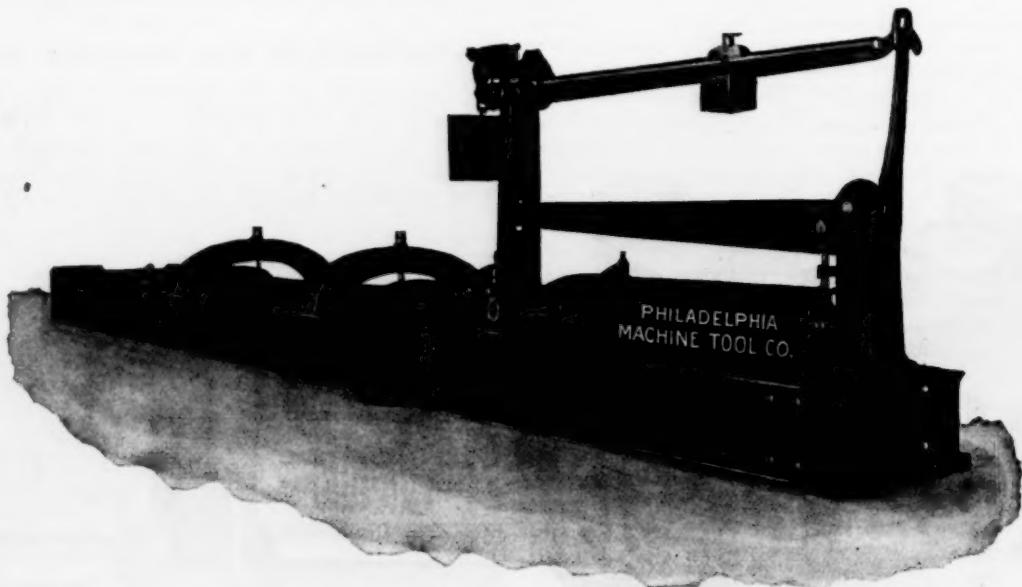
A Blue Book just issued, giving an actual return of the navigation of the United Kingdom, shows British shipping in 1900 to have decreased, inward shipping by 2,619,242 tons, and outward shipping by 2,903,600 tons, while foreign shipping increased, inward by 2,482,113 tons and outward by 2,470,576 tons.

Forest Park, at St. Louis, Mo., has been selected as the site for the Louisiana Purchase Exposition, to be held in that city in 1903.

The Philadelphia Chain Testing Machine.

The Philadelphia chain testing machine shown in our engraving is the latest design of machine of this class built by the Philadelphia Machine Tool Company, 443 North Darien street, that city. In recent years there has sprung up a demand for chains of much larger sizes than previously called for, chiefly because a great number of large ships have been built. As all ship cables are proved, this one branch of the trade has brought about a demand for large testing machines. In proving a chain it is subjected to a known load which is about 50 per cent. of its ultimate strength in order to develop any bad welds. After this test a few links are cut from one or the other end of the chain and broken, giving the ultimate strength. The length adopted for proving is 90 feet. It will readily be understood that the machine required for such testing must be of a high order. The very long lengths of chain proved requires a long stroke on the pulling mechanism and the size of the larger

warranted by the saving in cost. The delicate and accurate part of this machinery is the mechanism for weighing the load, while the other portion of the machine is simply power mechanism not very liable to derangement. These two portions should be as nearly detached as possible, and the weighing mechanism placed in some kind of shelter or office to protect it. If for any cause, accidental or otherwise, it should be necessary to get at the cylinder it is very accessible when arranged in this way, and the weighing mechanism need not be disturbed. The cylinder of the machine is arranged with a quick return of the piston about five times the pulling speed, which very much increases the capacity of the machine. The pumps are of a new pattern. The weighing mechanism has very long knife edges supported their entire length. These knife edges are carefully seated so that at all loads they are held in exact position without deflection in any direction. The beam has a screw propelled poise, and readings are made directly off disks at the operating end. The direct reading very



THE PHILADELPHIA CHAIN TESTING MACHINE.

chains requires considerable power. The largest machines now made run up to 600,000 pounds or slightly larger, and have a stroke of about 7 to 8 feet. All machines for this purpose are of the horizontal hydraulic type, and so far the weighing end has been of the knife edge type. Weighing 600,000 pounds on knife edges requires the highest order of designing and construction, and what is "good enough" for the old small machines will not do for this. One great trouble with these large machines has been that they become "dead," or even break down completely before the load reaches the rated capacity of the machine. By "dead" is meant that the beam no longer responds to the increase of load. This is usually due to weakness in the levers. A slight deflection of one or two of the various levers is sufficient to bring about this condition. Deflection of the pivots may cause the same trouble. For some time before the beam actually becomes "dead" the machine does not weigh correctly. The machine should always be rated by the load its weighing mechanism will weigh correctly. This is so self-evident that it would hardly seem to require enunciation, but it is an unfortunate fact that the machine is too often rated by its pulling power and the weighing mechanism is accepted as all right if it does not break down, its accuracy not being tested.

Now, coming to the machine we illustrate, it will be observed that it is a horizontal hydraulic machine. The weighing mechanism is placed at the end of the cylinder. To economize space it is sometimes placed over the cylinder, but it is poor practice to do so, and it is not

much reduces the liability to error while the operator's ability to read without moving from his position enables him to work much faster.

In the *Journal of the American Institution of Electrical Engineers*, S. Sheldon, in a paper on "Electrolytic Corrosion in Brooklyn," gives some interesting data illustrating the extent of the damage by leakage currents in the vicinity of electric car lines. Brooklyn spreads over 60 square miles and is covered with a network of electrical car lines, some of which have been in operation nearly ten years. At certain times of the day 1100 cars are running, which require a current of 47,000 amperes. This current returns to seven central stations, mainly by the rails and return feeders. There are, however, large street currents flowing into water and gas mains, and the wrought iron service pipes in the gas mains have suffered severely. In one block of buildings 38 service pipes were completely destroyed in two years. The city gas company are now complaining of the increase of leakage of gas, which is rated at about 14 per cent. of the total output. The lead sheathing of the telephone company's cables is also found to be pitted and perforated in many places, and the mains of the Edison Electric Lighting Company have also suffered very severely from electrolytic corrosion. Mr. Sheldon expresses surprise that the cast iron water mains have been very little affected, and suggests that this is due to the non-conducting siliceous compound formed on the surface of the mains in the sand mold in which they were cast.

Canadian News.

Nova Scotia Steel & Coal Company.

TORONTO, July 8, 1901.—Another stage of evolution has been entered by the corporation hitherto known as the Nova Scotia Steel Company. At a meeting of the directors of that company a few days ago the transfer of their properties to the Nova Scotia Steel & Coal Company was completed. The latter are a newly constituted concern. The directors of the late Nova Scotia Steel Company were elected without change as directors of the Nova Scotia Steel & Coal Company. The power of the directors to transfer the Nova Scotia Steel Company's property rights, &c., was conferred by a Dominion act passed last year, which authorized the directors to sell or lease if a by-law approved by two-thirds of the shareholders gave the necessary consent.

The business which thus passes into another transformation dates from 1872, when it was established at New Glasgow, N. S., under the name the Nova Scotia Forge Company. They manufactured railway and marine forgings. The success of that venture led to a branching, in 1882, into the manufacture of steel from imported pig iron and scrap steel by the open hearth process. This remained a separate business under largely the same proprietors, associated for their conduct in the Nova Scotia Steel Company. In 1889 the two companies were fused into the Nova Scotia Steel & Forge Company, and the combined plants were enlarged. In 1891 another company, the New Glasgow Iron, Coal & Railway Company, came into existence and built a blast furnace at Ferrona, N. S., near New Glasgow. In 1894 the Nova Steel Company were incorporated by an act of the Dominion Parliament, and into them were absorbed the Nova Scotia Steel & Forge Company and the New Glasgow Iron, Coal & Railway Company. The Nova Scotia Steel Company remained in existence until they disappeared the other day in the Nova Scotia Steel & Coal Company. A business of much earlier origin is embraced in the expansion—that of the Sydney coal mines. These were operated by the General Mining Association, which was formed in 1829, that corporation taking over the lease of the Duke of York's extensive coal lands in Nova Scotia. Their business and property were purchased in 1900 by the Nova Scotia Steel Company. It was to obtain the necessary capital for the operation of their new coal business and the developments to which the latter would give rise that the transition from the Nova Scotia Steel Company to the Nova Scotia Steel & Coal Company was decided on. The reorganization agreed upon at a meeting of shareholders held last October is now carried out. The shareholders of the Nova Scotia Steel Company receive in payment for their property \$3,090,000 of common stock, and \$1,030,000 of 8 per cent. cumulative preferred stock in the Nova Scotia Steel & Coal Company. The latter is organized with a capital of \$5,000,000 of common stock in \$100 shares and \$2,000,000 in 8 per cent. cumulative preferred stock in \$100 shares. Besides the stock there are to be first mortgage 6 per cent. gold bonds amounting to \$2,500,000. After providing for the purchase of the Nova Scotia Steel Company's property there will remain in the treasury \$1,910,000 of common stock and \$970,000 of preferred stock. The new capital required, and which is to be provided by the bond issue, is for redemption of the Nova Scotia Steel Company's temporary loan of \$1,500,000 and for the development of the coal mines, erection of shipping pier, coke ovens, coal washing plant, furnaces, &c., \$1,000,000. The properties taken over are: 1, the coal areas at Sydney and Point Aconi; 2, 7824 acres of freehold land in Cape Breton; 3, a freehold iron mine at Bell Island, and the company's iron claims in Nova Scotia; 4, coal land leases near Trenton, N. S.; 5, about 16 miles of railway; 6, 160 acres freehold land at Ferrona, N. S.; 7, a blast furnace, coal washing and coking plant, built in 1892, at Ferrona, the furnace having a capacity of 100 tons of pig iron per day; 8, about 50 acres of land at Trenton, on which are four steel melting furnaces, rolling mills, forges and other plant capable of turning out 100 tons of finished steel a day;

9, limestone and dolomite properties in Cape Breton County; 10, cash book debts, stock in trade, which amounted to \$635,789.48 last January.

Seeking Minerals on Hunter's Island.

A license of occupation has been granted by the Ontario Government to F. S. Wiley, H. A. Wiley and George Hodder of Port Arthur, and William F. Hogarth of Fort William, authorizing them to search for minerals upon a defined area of crown land in Hunter's Island, in the Rainy River district, almost on the boundary of Minnesota. The license also gives them the right to take up, under the ordinary provisions of the Mines Act, such deposits of value as they may find in the area. It is to last for three years, and the licensees are required to expend in exploration and development work on the land occupied, \$120,000 in that period—\$25,000 the first year, \$40,000 the second year, and the remainder the last year. At the end of the first year one-quarter of the area is to be surrendered to the Crown; at the end of the next year, five-twelfths, and at the end of the third year the remainder, the supposition being that these respective sections shall have been explored in this order. Of course deposits of value discovered by the company will be taken up and operated by the latter. The concession covers an area of about 147 square miles, exclusive of the lands under the waters of the lakes and rivers. It lies in the southeast part of the island. This is the section marked as the source of considerable iron deposits on the map accompanying the report of the Royal Commission on the Mineral Resources of Ontario, prepared in 1890. A number of iron locations were taken up there some years ago, but none have yet been developed. All existing rights or previous discoveries in the described area are excepted from the concession. It is the purpose of the licensees, who are all well known mining men, to prosecute energetically the work of exploration and development, and if their search is rewarded by the discovery of iron ore in sufficient quantities it is intended to construct a railway and operate on a large scale. For a number of years the Wileys have been operating the West End silver mine, about 50 miles west of Port Arthur, and are producing bullion steadily therefrom. They are also interested in iron ore on the Atikokan and Pic rivers.

MINOR NOTES.

Daniel Smith, C. A. Macpherson, Kingston, Ont.; Hugh Macpherson, Nelson, B. C.; F. H. Hooper, Brownsburg, Que., and F. King, Kingston, have been incorporated under letters patent to take over the business carried on by the Ontario Powder Works Company, and to manufacture and deal in explosives. Capital, \$100,000.

The following articles used as materials in Canadian manufactures have been transferred to the free list of the tariff: Key pins, damper springs, jack springs, rail springs, regulation screws, spoons, bridle wire, damper wire, back check wires, dowel wires, German center pins, brass pins, rail hooks, brass brackets, plates, damper rod nuts, damper sockets and screws, shell, brass capstan screws, brass flange plates and screws, hammer wires, fly felt, butt felt, damper felt, hammer rail cloth, back check felt, catch felt, thin damper felt, whip cloth, bushing cloth, hammer felt, back hammer felt.

Major Gaudet, superintendent of the Government cartridge factory at Quebec, is making arrangements to extend the works there. In addition to turning out ball and blank cartridges, the works will now produce common, shrapnel and segment shells. Besides cast iron shells, projectiles of forged steel will also be made. About 135 hands are now employed.

The fire at Lachine did damage that is estimated at \$100,000. It broke out in the core room of the Montreal Pipe Foundry Company, and soon a great portion of the building was in flames. The Montreal Car Wheel Works adjoining also suffered.

C. A. C. J.

The negotiations between the Tennessee Coal, Iron & Railroad Company and the Alabama Steel & Wire Company of Ensley, Ala., looking to the acquisition of the plant of the latter by the former, have been broken off.

The Smith-Warren Hollow Metal Window Frames and Sashes.

The hollow metal window frames and sashes, glazed with wire glass, made by the Smith-Warren Company of 143 Federal street, Boston, possess many advantages over the ordinary fire shutters. They always afford free access for light and at the same time offer a positive resistance against the spread of fire. The windows close and lock automatically if left open, in case of fire.

The company have several different types of constructions suitable for different classes or parts of buildings, from the cheapest window having a stationary lower light and vertical sliding (or pivoted) top sash, suitable for areas, factories, stairways, elevator shafts, &c., to one having three weighted sashes, two of which are glazed with wire glass and the third, or inner sash, glazed with clear glass, and provided with a metal fly screen if desired, suitable for use on the principal street fronts of the best class of office, apartment and hotel buildings. The frames can be molded so as to secure

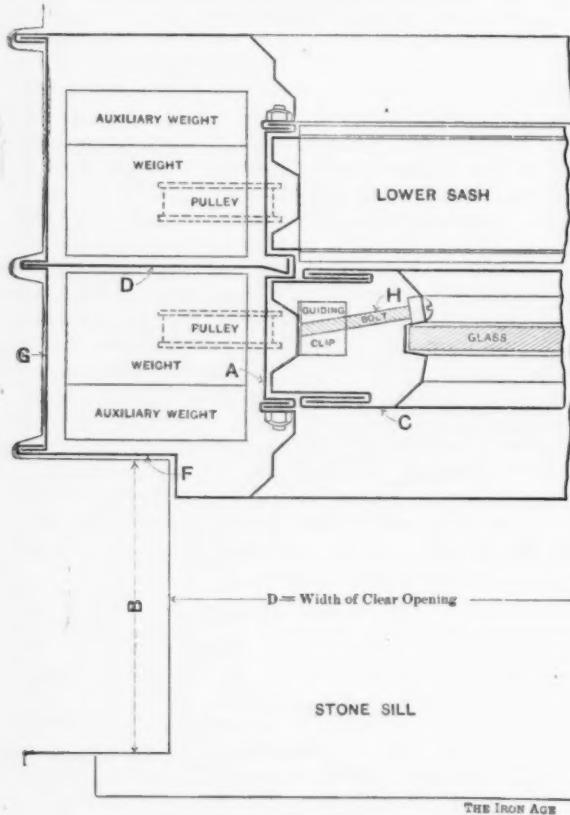


Fig. 1.—Sectional Plan, Showing Construction.

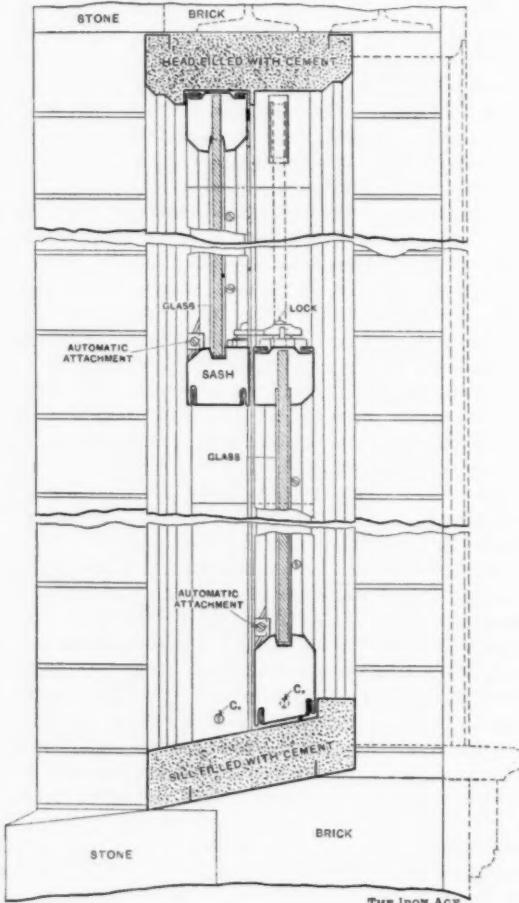


Fig. 2.—Vertical Section.

THE SMITH-WARREN HOLLOW METAL WINDOW FRAMES AND SASHES.

any architectural effect desired, are perfectly straight and true, and there are no joints visible. As the frames are hollow, one side may be heated to a white heat, while the other side remains cool, thus insuring continual structural strength. They can be made with hinged, pivoted or stationary sashes, with or without transoms, single or in groups of two or any number, and can be adapted for use in interior walls, elevator shafts, &c., as well as in exterior walls. The glass fits into grooves formed in the center of the sashes and requires no clips or putty to secure it. The sashes are made of No. 24 gauge galvanized iron or 18-ounce copper; the frames of No. 24 or No. 22 gauge galvanized iron or 18 or 20 ounce copper, according to type of construction, situation, &c.

The first two drawings show one type of construction. The side of the frame consists of parts A, F, G and D, and are joined by locks, as shown. The guiding face A is of heavier material than the other parts and can be easily renewed without disturbing the frame proper. It is made in two pieces with a joint nearly midway between the head and sill. The lower part is secured in

place by screws, C, Fig. 2, thus allowing easy access to the weights by its removal. The part D extends the whole length of and entirely through, and serves to stiffen the frame. The part C of the sash joins the horizontal top and bottom rails and forms a part of the sash frame for holding the glass.

The part B is joined to C by a long sliding lock, as shown, and is held out from the sash and into the guiding face of the frame by bolts H. The sash can be removed by loosening these bolts, which allows B to recede into the sash and out of the frame, thus making the sash narrow enough to allow it to pass out of (or into) the frame, between the stop beads. It will be seen that the sash being adjustable in width, insures a snug fit in the frame. It will be noticed that the wearing parts of both frame and sash are easily renewed without disturbing the body

of either, and the peculiar formation of both frame and sash with their locks makes them very rigid.

Fig. 2 is a vertical section showing the head and sill filled with cement, and the method of constructing the top rails of both sashes in two parts, so that the glass can be easily placed into position.

The cap A is made of heavy material, is secured in place by locks, as shown, and can be quickly removed by sliding out at one side of the sash.

The automatic self closing attachment is shown in Fig. 3. In weighted sash constructions the weights of the lower sash are made lighter than the sash, and those for the upper sash heavier, thus causing both sashes to close, and in the window in which one sash balances the other, using no weights, the lower sash is made heavier than the upper, which causes the lower sash to descend and the upper sash to ascend, thus closing the windows. But in order to hold the sashes open when desired a friction is provided at the side of the sash against the frame, thus compensating for the difference in weight between the sash and its balancing weights, which hold the sash in any position desired.

This friction device will be understood from the following: A square tube, A, is secured permanently in the side rail of the sash. A movable hard wood friction shoe, B, slides in and projects from the end of the square tube A and comes in contact with the side of the frame. This friction shoe is pressed outward by the spring C, the pressure of which is regulated by the position of the nut D, the position of which is changed by turning the bolt E, which is held in the square tube by the detachable cap F. A part of the bolt head projects through the cap so that it can be turned with a screw driver, thus regulating the pressure of the spring. The detachable cap F is held in place by solder that melts at between 150 and 180 degrees F. It will be seen that if the windows are open, in case of fire the fusible solder will melt,

press the lock A back into the muntin with the finger, when the sashes may pass each other.

When the window closes automatically (if left open in case of fire) the lock A will move out of the muntin and over the lower sash, thus holding the windows securely locked independent of the chains. Should the chains fuse or elongate on account of the heat, the windows will remain closed.

Judge Wing of the United States Circuit Court in Cleveland, Ohio, issued on Monday a sweeping injunction against the striking molders of the Otis Steel Company of that city. It enjoins local branch, No. 218, of the Iron Molders' Union of North America, from picketing the premises, or interfering in any manner whatso-

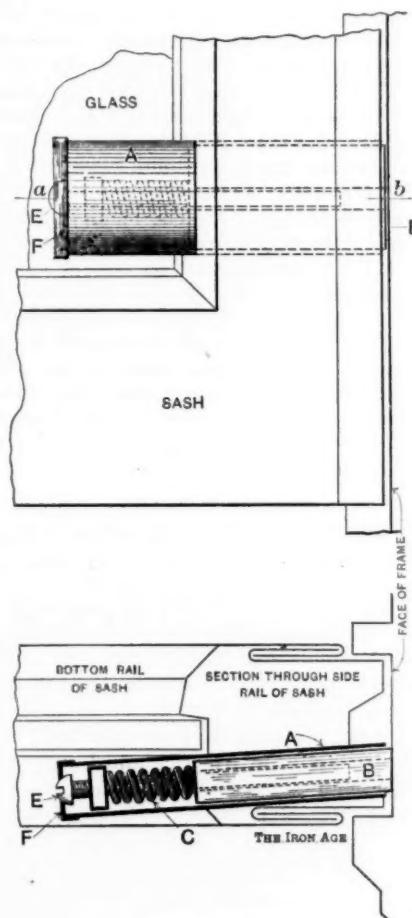


Fig. 3.—Automatic Self Closing Attachment.

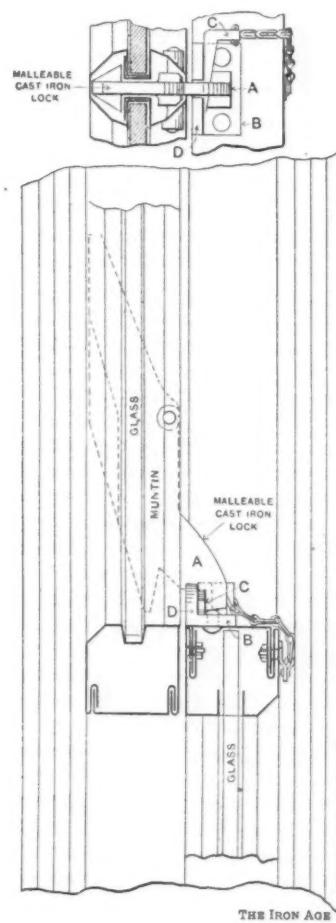


Fig. 4.—The Automatic Lock.

THE SMITH-WARREN HOLLOW METAL WINDOW FRAMES AND SASHES.

releasing the detachable cap which will release the bolt and spring, thus removing the pressure of the friction shoe B from the side of the frame, and as there is then no obstruction the sashes close. The attachment is small and is partly concealed within the hollow space of the sash, thus not being noticeable in the appearance of the windows.

The automatic lock is illustrated in Fig. 4. A piece of malleable cast iron, A, is pivoted in the muntin of the upper sash and projects through the muntin at its lower end, the weight of the lock being distributed with reference to its pivot so as to keep this end projecting out of the muntin at all times without the aid of a spring. The cast iron plate B is riveted on the top of the lower sash and has upwardly projecting lugs, D, between which A passes. An iron wedge, C, is inserted between the lock A and lugs D on the plate B, and by pressing the wedge into place the meeting rails of the sash are brought closely together, the upper sash is forced up and the lower sash down, thus tightly closing the windows and making a burglar and weather proof fastening. To open the windows it is only necessary to remove the wedge C and

ever with the business or the employees of the Otis Company. The Court holds in effect that picketing is unlawful; that it consists of "organized espionage on the part of the union or others who are doing the picketing of the premises on the employees of the firm in question." Commenting on the assertion of the molders that their efforts had been entirely confined to persuasion, the Court said: "Persuasion of itself, long continued, may become a nuisance and unlawful."

In the first six months of 1901 the Maine shipyards turned out about 28,000 tons, gross, of new vessels, indicating that the total output for the year will exceed that of 1900. Bath yards alone have now in hand steel and wooden vessels aggregating nearly 20,000 tons.

The British naval shipbuilding programme for 1901-1902, announced last week in the House of Commons, contemplates the construction of three battle ships of a new and improved type, six first-class cruisers and 10 torpedo boat destroyers.

Notes from Great Britain.

Offices of *The Iron Age*, HASTINGS HOUSE,
NORFOLK STREET, STRAND, LONDON, W. C., June 29, 1901.

Profits and Promotions.

Two of the best known companies have this week announced their profits for the financial year. John Brown & Co. of the Atlas Works, Sheffield, and Clyde Banks Ship Yard, Scotland, report a profit of \$2,250,000. This large profit is the outcome of successful working in all departments, the armor plate, collieries, steel and shipyards. The tonnage of coal raised last year has been much in advance of anything heretofore, and selling prices are above the average. The chairman, however, announced that he was sorry to say that prices were now tumbling down day by day. However, with a dividend of 20 per cent., the directors of John Brown & Co. have no special cause to complain. Another well-known company is that of the Ebbw Vale, whose gross profit for their working year is announced to be \$1,100,000. They pay a dividend of 6 per cent., carrying \$250,000 to the reserve fund and \$90,000 being carried forward to next year. These figures look fairly well on the surface, but in point of fact, the Ebbw Vale Company last year worked their steel department at a loss. The autumn of last year witnessed an almost absolute cessation in the demand for steel, and the greatest difficulty has been found to keep the steel works employed.

American Competition.

The chairman in commenting upon the report said that competition with America had been exceedingly keen. They had had stern experience of it not only in their efforts to secure foreign and colonial contracts, but in the import of the material direct into the United Kingdom. The amount imported was not in itself so considerable—it was something over 100,000 tons—but it was the particular class of manufacture that the company produced. The mischief was occasioned not so much by the amount of the material brought into the country as by the disturbance and the demoralization of the market which it brought about. The American competition was capricious. One month the Americans would contest every contract severely, and the next month, when prices had been modified, they would not send in a tender. The competition was also aggressive. The Americans, amply protected in their own markets by a protective duty, could well afford to send their surplus produce abroad and sell it either at cost or even at a considerable loss. The remedy for this state of things suggested by many of our eminent politicians was that we should cultivate technical education and possess ourselves of every scientific modern labor saving appliance. That was most excellent advice, and to the best of their ability and to the limits of their purse they had been consistently endeavoring for the last three or four years to carry the policy out. But suppose for one moment that English makers acquired every advantage in the way of machinery and even excelled America in that direction, did they suppose America would be very long in following suit? When the thing was thrashed out to its fundamental base, there still remained the American tariff between English makers and competition on a fair and equal footing. The fundamental point at which the chairman of the Ebbw Vale Company was driving was a demand for retaliatory import duties. So much for profits recently announced.

Bayliss, Jones & Bayliss, Limited, of Wolverhampton, have now been converted into a joint stock company, with a capital of \$2,000,000. This business was established in 1826, and employs at the present time nearly 2000 workmen. Among their numerous customers are the Admiralty, the War Office, the India Office, and most of the leading railway companies, engineers and contractors, not only in this country, but abroad. Another company just started on joint stock is the Urban Electric Supply Company, with a capital of \$2,000,000. This company have power to work electric light in a dozen different towns in England, and the plant required for these towns is estimated at \$1,500,000. As this company only deal with the smaller towns, it is

a significant indication of the growing mercantile importance of electricity.

The Boiler Trials.

Engineers have been watching very closely the result of the boiler trials in connection with the Boiler Committee appointed last year, and whose interim report I commented on two months ago. The idea of these trials was to put into commission two cruisers, the "Hyacinth" and the "Minerva," the one with cylindrical boilers, and the other with Belleville boilers. The "Minerva" has eight cylindrical boilers, with 19,200 square feet of heating surface, and the "Hyacinth" has 18 Belleville boilers with 17,000 square feet of boiler heating surface and 7000 square feet of economizer heating surface, making a total of 24,000 square feet, against 19,200 square feet in the "Minerva." The steam pressure in the boilers of the "Minerva" is 150 pounds to the square inch, against 300 pounds in the "Hyacinth," and the steam pressure at the engines is 150 pounds and 250 pounds, respectively. The weight of boilers, with water, in the "Minerva" is 340 tons, and the weight, under the same conditions, in the "Hyacinth" is 280 tons. The maximum indicated horse-power for an eight hours' run in the "Hyacinth" is 10,000, and in the "Minerva" 8000. Both ships are sheathed and are of the same displacement. The results of the experiments up to now are indecisive, but they show a superior economy in the Belleville boilers, with a compensating extravagance on the part of the engines. Each pound of coal burnt in the "Hyacinth" evaporated more water than the same quantity burnt in the "Minerva," but the engines of the Hyacinth required the extra steam to produce the same power. The "Hyacinth" not only showed economy in boilers, but is also shown to possess an advantage in speed. Further trials are to be made in the next week or two.

Manganese.

Notwithstanding the difficulties which manganese miners have to contend with in the Trans-Caucasus, the development of that industry has increased over tenfold in volume since 1885. There has been a growing demand for the ore for several years past in European markets. The United Kingdom imports from 1885 to 1900 of rough manganese amounted to 994,848 tons, or 39 per cent. of the whole quantity exported. Germany during the same period has purchased 18 per cent., followed by France, the United States of America and Belgium. The following table shows the amounts of the exports to foreign countries and shipments to Russia from the ports of Batoum and Poti since the year 1895, in tons—viz.:

Year.	Through port of		
	Batum.	Poti.	Total.
	Tons.	Tons.	Tons.
1895.....	5,516	166,242	171,758
1896.....	4,280	158,090	162,379
1897.....	3,923	194,791	198,714
1898.....	11,596	254,712	266,308
1899.....	22,726	381,008	403,734
1900.....	52,917	373,262	426,179
Totals.....	203,837	2,310,284	2,514,121

An Armor Plate Trial.

An armor plate from the works of John Brown & Co., Limited, was subjected to a severe test last Tuesday. It is the custom of the Admiralty in ordering armor plates first to test the sample submitted, and then to claim from time to time to test the plates as they are passing through the works. A plate complete in every respect except for the drilling of the bolt holes in the back, but with some defects in the nature of cracks in one end, as to the importance of which the Admiralty overseer had some doubts, was selected for firing trial. As far as could be judged from all appearances, its quality was rather below than above the average of the whole ship, yet it stood the very severe test even better if possible than the sample plate governing the order. The face of the plate had drilled and tapped in it about 90 small holes for various attachments, so that some little difficulty was experienced in arranging the points to be fired at—at the apices of a triangle of 3 feet each side—to prevent either of them from actually falling upon one of these small holes. According to the Ad-

miralty specification, the plate had to resist two blows from a 9.2-inch armor piercing steel shot of 380 pounds weight, striking with velocity of 1900 foot seconds, and one blow of the same shot with as much reduced velocity as the plate seemed then capable of sustaining. The plate stood the first two rounds so well that the third shot was also fired with full velocity; one crack to the edge 4 inches deep at the edge was occasioned, as well as a few superficial hair cracks in the face, but all the projectiles were smashed to pieces without obtaining more than 3½ inches of penetration. The particulars of the trial are thus specifically set forth: Plate, 12 x 7 feet 6 inches by 8.8 inches thick, bent and fitted to ship's side; bolts, 12 of 4½ inches diameter, 5 feet long; backing, oak; frame, none; attack, three rounds of Holtzer armor piercing steel projectiles of 9.2 inches diameter and 381 pounds, 379 pounds and 379 pounds weight, striking at the apices of an equilateral triangle 3 feet per side, with velocities respectively of 1899, 1900 and 1900 foot seconds, each capable of piercing over 20 inches of wrought iron.

The Markets.

There is nothing new to report upon the markets. The volume of business still continues good, and the prices both of marked and unmarked bars show a tendency to stiffen. In the Middlesbrough district there have been large additions to warrant stocks, with consequent falls both of warrant and makers' prices. The former have gone down to about 43 shillings 8 pence, while manufacturers are asking 44 shillings 6 pence for No. 3 Cleveland. Merchants, however, are offering iron at 44 shillings. Notwithstanding this, however, the shipyards on the Tees and Tyne show much activity. It is currently said that the makers of finished iron would be quite prepared to raise their prices if only they could be sure that American competitors would not step in. In short, the fear of American competition acts as a constant drag upon prices. The position in the steel trade shows signs of weakening, and there have been renewed offers of German billets at £4 17s. 6d. As a considerable proportion of ironmasters, managers and overseers are now on their holidays, there will not be much more activity in the metal markets until September.

S. G. H.

The Carnegie Technical School.

The advisory committee appointed by the Board of Trustees of the Carnegie Institute of Pittsburgh, to investigate and prepare a plan for the proposed School of Technology to be presented to the city of Pittsburgh by Andrew Carnegie, have handed in a report which advocates the establishment of three grades of schools. The first will be the Carnegie Technical College, which will provide a technical education to high school graduates, teaching engineering in all its branches. The second, to be called the Carnegie Technical High School, will be for the benefit of graduates of the grammar schools, and will provide, in addition to the regular high school studies, instruction in blast furnace and foundry practice, brass founding, pattern making, metal working, stationary, locomotive and marine engine and boiler management, gas manufacture, electricity and other departments, more particularly adapted to the needs of the Pittsburgh district. The third school will be the Carnegie Artisan Day and Evening Classes. These classes are intended for the benefit of those who are unable to take advantage of the more complete courses in the technical school.

Irwin Belford, appointed referee in an action brought by the Pittsburgh Reduction Company against the Cowles Electric Smelting & Aluminum Company in the year 1892, has just made a report of his findings, which are in favor of the Pittsburgh Company. The Cowles Company, it is alleged, used the Hall patent for the manufacture of aluminum, thereby infringing on the rights of the Pittsburgh Reduction Company, the owners of the Hall patent. A claim for damages has been allowed to the Pittsburgh Reduction Company by the referee to the extent of over \$500,000. The Cowles Company also have

a suit pending against the Pittsburgh Reduction Company for an alleged infringement of the Cowles patent.

Models of the Niagara Falls Power Company.

In the Electricity Building of the Pan-American Exposition there are exhibited two models that are thoroughly interesting, inasmuch as they portray the wonderful development of power by the Niagara Falls Power Company. Not only do they give an accurate idea of the work accomplished to date, but they go still further and show how the buildings will look when the second great power station and installation has been completed.

Both of the models are the work of Edwin C. Howell of Washington, D. C., and the second one was only placed in position and completed this week. One of the models shows the exterior of the power houses. In every feature, even to the most minute detail, the models picture these great power stations most accurately. The present station, it is shown, is to have a new gable added to the rear end to complete its proportions. Almost in front of this first power house is seen a small building to be built over the shaft that was sunk into the tunnel heading at the time of the recent extension of the tunnel around to wheel pit No. 2. In future winters ice will be floated from the inlet canal to this head house, where it will be allowed to drop into the tunnel, through which it will pass to the lower river. Although wheel pit No. 2 has not yet been completed, the Pan-American model shows how power house No. 2 will look when it is erected over this second great pit. Nearly all of the excavation of the pit has been completed, the depth attained being nearly that required, which is approximately 180 feet. Thus from this model one gets advance information in regard to the plans of the Niagara Falls Power Company. This second power house is to have an output capacity of 55,000 horse-power, as compared with 50,000 horse-power of the present station. The length of the new station will be about 560 feet, of which, approximately 320 feet will be erected for the installation first to be placed. This installation will be for 30,000 horse-power, the units for the balance of the output capacity of the station to be installed as demand makes necessary. In width the new power house will be about 70 feet. The model also shows that the company have adopted a covered forebay in connection with the new power house, and it intimates that the forebay of the present station may also be covered in time. The structure that covers the forebay of power house No. 2 will be about 40 feet wide, and it will serve to shelter the racks and the men working about them in winter time, and in other ways be an aid to keeping the racks free from the annoyance of ice.

While the two great power stations will be located on opposite sides of the inlet canal, which flows between them, it should not be overlooked that the two wheel pits will be connected by a tunnel having an approximate length of 310 feet, and which will start from the turbine deck in each pit, the depth being about 130 feet below the surface. This connecting tunnel will be for the accommodation of the company's employees in passing from one pit to the other, thus avoiding the necessity of ascending to the surface to pass from pit to pit. In size this connecting tunnel will be about 6 x 8 feet and lined with brick.

The second model which has to do with this wonderful development at Niagara Falls shows the power house with the office front cut off, thus allowing visitors in inspecting it to look right into the dynamo room. The penstocks, the turbines, the shafts, the elevator, all are there. One of the turbines will be in operation, affording the exposition visitors an unusual opportunity of learning exactly how power is developed at the falls. The location of the models in the Electricity Building is well toward the west end. Right opposite them is the Niagara transformer plant, where the voltage of the transmitted electric energy of Niagara is reduced from 11,000 to 1800 volts.

The launching of the new battle ship "Maine" from the Cramp shipyards in Philadelphia is fixed for Thursday, July 25.

The Iron Age

New York, Thursday, July 11, 1901.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
CHARLES KIRCHHOFF,	- - - - -	EDITOR.
GEO. W. COPE,	- - - - -	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.
JOHN S. KING,	- - - - -	BUSINESS MANAGER.

Congressional Interference with Industrial Consolidations.

During what remains of its official life, which expires by limitation with the present calendar year, the United States Industrial Commission will probably find it consistent with its duty, and certainly with the popular expectation, to formulate a report on the absorbing subject of industrial organizations, and to embody therein some plan for their regulation by Congress. What this report will recommend we have no means of knowing, but an indication of the direction in which the thought of the members of the commission is tending is furnished by the statement of one of them that their investigations have led to the conclusion that the Sherman law needs important amendment, for the reason that "it is inadequate to cope with the question of industrial combinations in their present state of development." Some idea of what to look for in the completed work of the commission may be gained from its preliminary report submitted in 1900, over the names of 17 of the 19 members. From that report we quote as follows:

"At present we propose the following, which, if generally adopted by the States, or so far as possible by the Federal Government, we are confident will be of great service and will not endanger business prosperity. To prevent the organizers of corporations or industrial combinations from deceiving investors or the public, either by the suppression of material facts or by making misleading statements, your commission recommends:

a. That the promoters and organizers of corporations or industrial combinations which look to the public to purchase or deal in their stocks or securities should be required to furnish full details regarding the organization, the property or services for which stocks or securities are to be issued, amount and kind of same and all other material information necessary for safe and intelligent investment.

b. That any prospectus or announcement of any kind soliciting subscriptions, which fails to make full disclosures as aforesaid, or which is false, should be deemed fraudulent, and the promoters and their associates held legally responsible.

c. That the nature of the business of the corporation or industrial combination, all the powers granted to directors and officers thereof, and all limitations upon them or upon the rights and powers of the members, should be required to be expressed in the certificate of incorporation, which instrument should be open to inspection by every investor."

It is scarcely to be expected that the commission, having had another year for deliberation and the taking of testimony, will be content to submit a report so ludicrously illustrative of the classic fable of the mountain and the mouse. The suggestion that the Sherman law is insufficient for the attainment of the purposes for which it was designed indicates that some members at least of the commission favor Congressional legislation, taking the matter of the regulation of corporations out of the

hands of the several States and vesting it in the legislative branch of the Federal Government. We confidently hope that nothing of the sort will be proposed. The greatest danger which could possibly arise in connection with the formation of corporations, large or small, would follow an attempt to regulate them by act of Congress. It is more than suspected that at least one great industrial interest has had a larger influence in shaping the policy of the Federal Government for some years past than is wholesome or satisfactory. If it has influenced the foreign policy of the Government through its representatives in the Senate, as claimed, it would be a scandal of vast proportions. Should Congress arrogate to itself the extra constitutional power of legislating concerning corporations for the protection of a credulous and confiding public, such action would mean nothing other or different than taking the great industrial consolidations under its wing and effectually protecting them against any inconvenient interference on the part of State governments.

For many members of the Industrial Commission we have the highest respect. It is not inconsistent with this statement to say that its collective wisdom, if its preliminary report from which we have quoted above may be taken as an indication of its capacity to deal with the problems submitted to it, bears a close resemblance to foolishness. The idea that the capitalist who invests in corporate stocks or other securities is an incapable who needs to be taken by the hand and led away from the temptation to buy securities of which he knows nothing and can know nothing, will strike as very funny the man who has had to do with the financing of industrials. Everything which the commission prescribes as necessary is now required by the corporation laws of every State in which other than strictly local companies are incorporated. No class of citizens are better able to take care of themselves and avoid the snares and pitfalls of unscrupulous promoters than those who purchase at first hands the "stock and securities" of corporations and industrial consolidations. They lack none of the information called for in the programme of the Industrial Commission, and are perfectly able to hold to both civil and criminal responsibility those who perpetrate frauds in connection with the flotation of industrials. The only people ever bitten in such transactions are those who buy the stocks of industrials in the open market at prices above their value. Such persons never come in contact with promoters. They would not read reports if printed. They care nothing about anything but the expected profits of a more or less reckless speculation. They may purchase under a misapprehension on many points, but that is their own affair, and no scheme of laws could be devised so paternal as to operate for the protection of the buyer of stocks from the curbstone broker against buying unwisely and putting his money at risk in so doing. If the right to make a speculative profit is left open to him, he cannot very well be safeguarded against speculative losses. The first recommendation of the commission rests upon a total misconception of the facts, and if carried into effect would do vastly more harm than good. The only way to accomplish what it has in view would be to enact a law making it a crime for any one holding a share of corporate stock to sell it without a responsible guarantee that it is worth what is paid for it and will remain so.

The most profitable subject to which the United States Industrial Commission can give its attention during the remainder of its official life is the broad question whether the corporations and industrial consolidations need any other or better regulation than results from the limita-

tions which now hedge them round, due to the prudence of bankers, the caution of investors and the existence of a competition which cannot be extinguished nor controlled. It is not good statesmanship to legislate against purely imaginary evils. That none have yet arisen demanding comprehensive remedy may be stated without fear of intelligent contradiction.

Labor Unions and the Public Peace.

The immunity enjoyed by those who commit or are responsible for the commission of serious crimes against persons and property to assist in the attainment of some end deemed desirable by organized labor, is tending to bring about conditions very closely resembling those of anarchy. That the partisans of the labor unions are manifesting an increasing contempt for everything in the form of law which does not leave them free to inflict such injury as they see fit upon those who interfere with their plans, is startlingly evident. Even when acts are committed which the wiser and more conservative labor leaders deprecate as ill advised and injurious, those who commit them may be sure of a moral and material support which is usually strong enough to stand between them and the consequences of their crimes against the public peace. Where this tendency is leading, and what may be expected when habitual immunity establishes the usage that a mob acting in the name, or in the interest, of organized labor may do what it pleases without responsibility under the law, is an interesting, if somewhat startling, subject of speculation.

A striking illustration of the tendency of which we speak was furnished at Waterbury, Conn., on the Fourth of July. A party of hilarious strikers took their position on the bank of a narrow stream opposite the plant of a manufacturing company which was making an effort to operate without their assistance, and for several hours bombarded it with highly incendiary missiles. Rockets were the favorite projectile, as they could be aimed very accurately from troughs set at the proper angle to give them the required trajectory of flight, were propelled with great force, and when intercepted exploded with violence, scattering fire in every direction. The purpose of the bombardment seems to have been to set fire to the plant, and incidentally to kill or cripple as many as possible of the employees. It may have begun in a reckless frolic, with very little idea of the probable consequences, but it soon developed into a bombardment conducted in grim earnest. The door of the carpenter shop was the target at which the rockets were first aimed. When this was effectually closed and protected, the windows were smashed one by one. The people inside the buildings were kept busy for several hours fighting fire. Vigorous efforts were needed to save the plant, and two or three employees were injured. One of the watchmen had his clothing set on fire and was painfully burned. No doubt it was "great fun" for the besieging party. Their siege was conducted without even a remonstrance from the police, and was discontinued only when it had ceased to be amusing. That no lives were lost or valuable property destroyed is due wholly to the vigilance of the besieged, and not at all to the consideration of the besiegers. Whatever their original purpose in beginning the bombardment, it soon developed into a deliberate purpose to inflict serious injury on the persons of the workmen and the property of the company. The case is typical, and for that reason we mention it.

In a well ordered community with a properly organ-

ized and efficient civil government such a thing might have happened, because unexpected, but it could not have continued very long without energetic police interference, and it would certainly have been followed by a searching inquest, and the indictment and arrest of those known to have participated in the outrage, some of whom would have had a good chance of going where work is done without union supervision. We venture the prediction that in the instance under consideration the wheels of justice will be found to hang on their centers, and the chief value of the incident will be to give the strikers and their friends something to laugh over for a long time to come. It should be remembered, however, that between skyrockets and shotted field guns the line of demarcation is neither very wide nor quite visible. The question at issue is whether a mob of workmen may commit an act of war with any greater immunity than would be accorded an equal number of brigands or a band of tramps. To understand these matters we must divest the actors and their acts of any sentimental distortion. The honest workingman is an admirable member of the body politic, and is entitled to all proper respect and consideration; but if the honest workingman becomes a rioter, an incendiary and a perpetrator of violence with intent to destroy life or inflict grave bodily injury upon those of whom he disapproves, he takes his place before the law with other malefactors, and is entitled to no more consideration than they. No right minded workingman, who is a good citizen and worthy of the privileges of citizenship, will, in his moments of sober reflection, dispute a proposition so obvious.

That there is a growing tendency on the part of organized labor to impose upon the members of labor unions obligations inconsistent with those of good citizenship is shown by the recent incorporation into the constitution of the "benevolent" branch of the Amalgamated Sheet Metal Workers' Association of the following amendment:

"Any person a member of the regular army or navy, or of the State militia or naval reserves, shall not be eligible to membership in this association. Any member of this association who shall become a member of either one of the above named bodies must tender his resignation of membership to the association at once."

The obvious meaning of this clause is, no member of this union is permitted to put himself in a position where he may be called upon to protect life and property or to restrain the excesses of mobs. The State militia have on more than one occasion been called upon to supplement the police in sustaining the authority of the civil government, and in so doing have made themselves extremely inconvenient to the labor unions. To forbid the membership of a trade union to join the National Guard is to deprive them of the right to perform a duty which every young citizen should deem it a pleasure to render. When the object of such prohibition is to remove, as far as possible, one serious obstacle to free riot, the matter becomes one of grave significance.

It should be evident to the better class of workingmen, who are capable of thinking consecutively, that the tendencies of development now at work in the labor movement are full of danger, and that wiser leadership is needed to avert disaster to the interests of all classes of society. A little wholesome self assertion on the part of those who abhor socialistic heresies and do not feel that the red flag of anarchy is the only banner they are called upon to respect, would have a marked influence in restraining the excesses of those who are leading the unions where the self respecting mechanic and loyal

citizen cannot follow without declaring himself an enemy to social order and good government. Never was the need of a great, wise, far sighted leader so exigent as it now is in the field of organized labor.

The Supply of Gold and the Supply of Credit.

The present conditions in the London and Berlin money markets are interesting in view of a good deal that has been said in the past two years about the effect of the South African war upon business in two directions: increasing the requirements of money by the British Government, and curtailing the supply of gold by shutting down the Rand mines. The reopening of the latter has begun, but, of course, the output is not yet important. Unfavorable conditions in Germany a year ago and in Russia two years ago were attributed to the decreased supply of gold, while a great contraction of the currency in England has been repeatedly predicted on account of the large sums of money absorbed by the Government by taxation and by loans.

The British Government has been disbursing money in the payment of troops, the purchase of supplies and the chartering of ships about as fast as it could get it. Wealth has been destroyed, but the currency has not been, and if money shipped from England has not returned thither it is on account of changes in the course of England's foreign trade, which have nothing to do with the monetary supply. The facts in regard to Russia and Germany are now well known. Both have had unprecedented booms, with plenty of speculation and not a little injudicious investment. The boom in Russia collapsed disastrously a year or more ago. The boom in Germany culminated about a year ago, since which time liquidation has been proceeding, accompanied lately with several financial collapses, but thus far without a general panic.

In both London and Berlin money is very easy. London complains of stagnation; the report for Berlin for last week says that there is an abundance of money, and rates of discount are declining. In both cities there is a disposition to attribute the low rate of money to stagnation due to uncertainties about the future. Money rates may be low in seasons of great business depression, simply from lack of demand, but this is not a common situation. If the prospects are bad there is a risk in lending, for which lenders demand compensation. It is not common for lenders to be forcing their funds upon the money market when borrowers are so uncertain about the future that they are reluctant to assume obligations. This very report from Berlin says that in spite of cheap money "the discounting business was extremely difficult owing to the great caution exercised by lenders." In other words, there is plenty of money at low rates in Berlin for borrowers who can offer good security, but a good deal of money has been lost, or is at present tied up in unfortunate investments, a few financial institutions prove to have been recklessly or criminally managed, and lenders are closely scrutinizing pledges. The general financial situation is marked by a great accumulation of capital within a few years, some losses from speculation and careless investments in the last two or three years, no lack of currency anywhere, in spite of the closing of the Rand mines, except among people who have nothing to sell or no good security for loans. The decrease in the supply of gold has had practically no effect at all. Trade dominates the currency, rather than the currency controls trade.

Information Wanted.—Who produces machinery for getting out and preparing iron for the market?

The Production of Iron Ore.

WASHINGTON, D. C., July 9, 1901.—The United States Geological Survey has completed the annual report upon the production of iron ores in 1900 prepared by John Birkinbine of Philadelphia. The features of the report embrace the maximum output in the history of iron ore mining; the heavy gains made in Minnesota; the aggregation of large iron ore properties and the assurance that anxiety as to future supplies of ore is wholly unfounded.

A total output of 27,553,161 long tons causes the calendar year 1900 to repeat the records of the years 1898 and 1899 with a production of iron ore in excess of the amount previously reported in any year for this or any other country. The following figures illustrate the remarkable increase in the quantities of iron ores won in three years: 1898, 19,433,716 long tons; 1899, 24,683,173 tons; 1900, 27,553,161 tons.

A statement of the maximum product of Germany and Luxemburg in 1900, when the output was 18,964,267 metric tons, or 18,667,950 long tons, and that of Great Britain in 1880, when 18,026,049 long tons were won, is given for comparison. The increase in the United States iron ore products for 1899 over 1898 was 5,249,457 long tons, equivalent to an advance of 27 per cent., and the increase of 1900 over 1899 was 2,869,988 tons, or 12 per cent. The production for the year 1900 was therefore 8,119,445 tons, or 42 per cent. greater than that of 1898, a marvelous record for two years.

It is interesting to note the quantities of iron ores which have been credited to the years for which the United States Geological Survey has collected statistics and to place side by side with these the quantities of pig contemporaneously made, for the bulk of the iron ore mined in the United States enters into the production of pig iron by the nation. The average annual products for the past 12 years were 17,171,700 tons of iron ore, and 9,577,592 tons of pig iron, suggesting an apparent average yield of domestic ore of 55.78 per cent. This does not take into consideration either the iron ore utilized for other than smelting purposes or the foreign iron ore or other materials which are fed to blast furnaces. An exact determination of these will show that domestic ores actually used in producing pig iron yielded a lower percentage of iron than above indicated. Taking the last five years, the returns suggest that about 1.83 long tons of domestic iron ore were produced for each ton of pig iron made in the United States. To determine the amount of iron ore or of materials used as such which are fed to blast furnaces the quantities of foreign iron ores imported and of zinc residuum, mill cinder, scrap, &c., must be added, the increase of stocks of ore on hand at the mines and the iron ore used as flux being deducted.

The Production in 1900.

In the year 1900 24 States and two Territories contributed to make up the total of 27,553,161 long tons, and each of these States, with the exception of Pennsylvania, Virginia, New York and Tennessee, showed by authentic figures an increased production over 1899. But the apparently decreased production indicated for the four States is in part explained by the difficulty of obtaining reliable data from a number of localities where ores were mined in moderate quantities by individuals, or where changes in ownership or direction interfered with securing exact returns in time for proper tabulation. In augmented output Minnesota leads, closely crowding for pre-eminence as a producer the State of Michigan, which has heretofore held first place. If the shipments of ore during the calendar year and not the productions are considered, Minnesota obtained first place. Considered geographically the increase in iron ore production in 1900 over the preceding year was most pronounced as to quantity in Minnesota, but the greatest percentages of gain were in the less important contributors—Maryland, Missouri and the group of Montana, Nevada, New Mexico, Utah and Wyoming.

The aggregation of large iron ore mines and the control of many prominent producers by consolidated interests has attracted attention to the iron ore reserves of the country, with the effect of awakening some anxiety

as to a sufficiency for the future, but an investigation will satisfy an unbiased observer that such anxiety is unfounded.

Most of the easily wrought known mines, or those producing the best or most desirable grades of ore, which are conveniently accessible for consumption in existing blast furnaces, have been secured by the larger steel plants. There are, however, important mines owned or operated independently of consolidations.

Outside Mining Interests.

Material advance in the price of the mineral will encourage the rehabilitation or the development of mines which are inactive or operated upon a restricted scale, and also the opening of deposits heretofore unwrought. Such a condition will also secure the transportation of ores from localities now considered too remote for economical use.

A decided advance in selling prices will also stimulate larger importations of ores from foreign countries, upon which a duty of 40 cents per long ton is levied.

In former reports attention was directed to the known existence of iron ores in all of the States. In some the mineral is lean or impure or in such thin or distributed bodies as to discourage operation, but there are many iron ore deposits of excellent composition existing in large quantities which have as yet been undeveloped, and there are other deposits exploited in former years upon a limited scale which under advanced conditions could be revived. Immense bodies of magnetites in the East can meet a heavy demand for ore, and the reduction, by roasting, of sulphur in such as need it, or of phosphorus and gangue material by concentration, can be carried on profitably if the selling prices of ores are much advanced. It is not improbable that large deposits of titaniferous magnetites may be brought into demand if the supply of ores wholly or nearly free from titanium is restricted. Many deposits of brown hematite ores, which have been wrought on a small scale, can be augmented, be cheapened and materially swell the country's total. The basic treatment of iron, which is advancing rapidly, may also be expected to extend the limitations which have been placed upon ores for steel production. In the central and western portions of the country there are important deposits of excellent iron ore which await the extension of the iron and steel industry or of transportation facilities, and if these ores cannot be conveyed to existing plants then furnaces will be placed nearer to the ores as rapidly as the country's demand makes such course advisable.

Character of Ores Mined.

It is considered advisable to continue these reports upon the general classification previously adopted, which is as follows:

1. Red hematite, being all anhydrous hematites, although known by various names, such as red hematite, specular, micaeaceous, fossil, slate iron ore, martite, blue hematite, &c.

2. Brown hematite, including the varieties of hydrated sesquioxide of iron, recognized as limonite, goethite, turgite, bog ores, pipe ores, &c.

3. Magnetite, those ores in which the iron occurs as magnetic oxide, and including some martite, which is mined with the magnetite.

4. Carbonate, those ores which contain a considerable amount of carbonic acid, such as spathic ore, blackband, siderite, clay ironstone, &c.

The red hematite variety, as in former years, contributed the largest amount of ore, 22,708,274 long tons, or 82.4 per cent. of the total, as against 81 per cent. in 1899. This is an increase of 2,703,875 tons, or 13.5 per cent. of the total iron ore production.

There were won in 1900 3,231,089 long tons of brown hematite, or 11.7 per cent. of the iron ore product, as against 2,869,785 long tons, or 11.6 per cent., in 1899, an advance, as compared with that year, of 361,304 tons, or 12.6 per cent.

In 1899 the total magnetite mined was 1,727,430 long tons, or 7 per cent. of the amount won in the United States. This product decreased in 1900 by 189,879 tons, or 11 per cent., the output of magnetite being 1,537,551 tons, or 5.6 per cent. of the total.

The balance, 76,247 long tons, or about 0.3 per cent., was carbonate ore.

Minnesota, the largest producer of red hematite ore, is closely followed by Michigan, while Alabama ranks third. Virginia and West Virginia lead as brown hematite sources of supply, Alabama being second and Colorado third. The greatest amount of magnetite was mined in Pennsylvania, New York and New Jersey indicating a close contest for second place, but ranking as above.

The larger portion of the carbonate ore mined in the United States came from the State of Ohio, Maryland and New York ranking second and third, respectively. The following figures give the amounts of the different varieties of iron ore mined in the United States in 1900 by States:

Michigan, red hematite, 9,615,904 tons; brown hematite, 136,157; magnetite, 174,666; total, 9,926,727.

Minnesota, red hematite, 9,834,399.

Alabama, red hematite, 1,989,689; brown hematite, 769,558; total, 2,759,247.

Virginia and West Virginia, red hematite, 3664; brown hematite, 918,157; total, 921,821.

Pennsylvania, red hematite, 44,653; brown hematite, 232,370; magnetite, 600,066; carbonate, 595; total, 877,684.

Wisconsin, red hematite, 733,312; brown hematite, 12,793; total, 746,105.

Tennessee, red hematite, 283,784; brown hematite, 310,387; total, 594,171.

New York, red hematite, 44,467; brown hematite, 44,891; magnetite, 345,714; carbonate, 6413; total, 441,485.

Colorado, red hematite, 3511; brown hematite, 403,573; total, 407,084.

New Jersey, magnetite, 344,247.

Georgia and North Carolina, red hematite, 55,884; brown hematite, 259,863; magnetite, 20,479; total, 336,186.

Taking the aggregate production of the different classes of iron ore for the 12 years during which the United States Geological Survey has collected statistics it will be found that the red hematite class has contributed over three-fourths of the total, the brown hematite variety slightly under one-seventh, the magnetite about one-tenth, and the carbonate the balance, slightly under 1 per cent. In 1900 both the red hematite and brown hematite mines contributed their maximum outputs, the other two classes showing a diminution from previous years.

In addition to the iron ore mined 88,945 long tons of zinc residuum and briquetted blue billy were used in blast furnaces, the former being manufactured into spiegel.

Concentrated Ore.

The amount of concentrated ore produced was more than doubled, rising from 94,217 tons in 1899 to 200,446 long tons in 1900, valued at the concentrating works at \$649,027. The concentration of iron ores by jigs and magnetic separators seems to indicate that the expectations for a liberal development which were so pronounced a decade ago may, at least in part, be verified. Some blast furnaces are using this in a large proportion of their charges. It is not improbable, taking into consideration advances in mechanical appliances for crushing, sizing and briquetting, and the improvements in magnetic separation, that the amount of concentrated iron ore produced will be rapidly augmented. Rolling mill scale, copper residuum, &c., are also used as portions of charges for blast furnaces.

The year 1900 shows a marked increase in the value of the iron ore, as in this year the iron ore miners had the opportunity to participate in the augmented price of pig iron. As most of the iron ore won is sold in the early part of the year and as these contracts had been made in 1899, prior to the advanced prices in the metal trade, few ore mines participated in any marked degree in the improved business conditions.

Lake Superior Region.

For the year 1900 the Lake Superior region, embracing iron ore mines in the States of Michigan, Minnesota and Wisconsin, produced its maximum output of 20,584,238 long tons, or more ore than was mined in the United

States in any one year previously, with the exception of 1899 and 1900, and more than has been reported as produced in any year by a foreign country.

In order to supply the demand some old workings were reopened, and much exploration work was done, while most of the larger operations were called on for increased amounts. In fact it was the year of maximum production on all of the ranges. It should be borne in mind that the figures given in this report are those of production and not of the shipments, the latter being smaller, owing to an increase in the stocks of ore on hand at the mines on December 31, 1900.

The production of the different ranges which are recognized as forming the Lake Superior region is given in the following table for 1899 and 1900:

Range.	1899.	1900.
Marquette	3,634,596	3,945,068
Menominee	3,281,422	3,680,738
Gogebic	2,725,648	3,104,033
Vermillion	1,643,984	1,675,949
Mesaba	6,517,305	8,158,450
Totals.....	17,802,955	20,564,238

The production of iron ore by States was as follows:

	1900.	Gross tons.
Michigan	9,926,727	
Minnesota	9,834,399	
Alabama	2,759,247	
Virginia and West Virginia.....	921,821	
Pennsylvania	877,684	
Wisconsin	746,105	
Tennessee	594,171	
New York.....	441,485	
Colorado	407,084	
New Jersey	344,247	
Georgia and North Carolina.....	336,186	
Montana, Nevada, New Mexico, Utah and Wyoming.....	132,277	
Ohio	61,016	
Kentucky	52,920	
Missouri	41,366	
Connecticut and Massachusetts.....	31,185	
Maryland	26,223	
Texas	16,881	
Iowa	2,137	
Total.....	27,553,161	

Producers.

In the year ending December 31, 1900, 110 mining operations each produced 50,000 long tons or over of iron ore, the total for the 110 being 24,329,567 tons, or 88.3 per cent. of the total for the United States, precisely the same proportion as in 1899. The average per mine, however, showed a decrease from 242,091 tons in 1899 to 221,178 tons in 1900. Of these mining operations 3 contributed over 1,000,000 long tons, 2 between 900,000 and 1,000,000 tons, 1 between 800,000 and 900,000 tons, 2 between 700,000 and 800,000 tons, 1 between 600,000 and 700,000 tons, 3 between 500,000 and 600,000 tons, 6 between 400,000 and 500,000 tons; 1 between 300,000 and 400,000 tons, 13 between 200,000 and 300,000 tons, 35 between 100,000 and 200,000 tons, and 43 between 50,000 and 100,000 tons. Of these mines 42 are situated in Michigan, 31 in Minnesota, 10 in Alabama, 6 in Wisconsin, 4 each in New York and Colorado, 3 each in Tennessee, New Jersey and Virginia, 2 in Pennsylvania, and 1 each in Georgia and Wyoming. Eighty-five of these important mining operations contributed 21,594,640 tons of red hematite ore, 15 brown hematite mines yielded 1,342,974 tons, 9 magnetic operations gave 1,234,183 tons, and 1 mine contributed a mixture of 157,770 tons of red hematite and magnetite.

W. L. C.

The American Shipbuilding Company have closed a contract for another large boat for the season of 1902. The boat will be owned by Capt. W. W. Brown of Cleveland, who will be managing owner, and James McBrier and E. D. Carter of Erie. She will be a duplicate of the steamers building for the Mutual Transportation Company, dimensions being 346 feet keel, 48 feet beam and 28 feet depth. She will have triple expansion engines with cylinders 20, 33½ and 56 inches with 40-inch stroke. She will be fitted with the Howden hot air system and will have two Scotch boilers 12 feet in diameter and 11½ feet long. The boat will have a capacity of 5000 tons, will cost \$230,000, and will be built at South Chicago.

The Allis-Chalmers Company.

Announcement is made that at a meeting of the Board of Directors of the Allis-Chalmers Company in New York, on the 2d inst., it was voted to appropriate \$2,500,000 for the erection of the company's new plant at Milwaukee, Wis. The board also decided to invest \$1,250,000 in a new plant to be located on the Atlantic Coast, for the manufacture of engines and mining machinery for the foreign trade. As negotiations for the site of the latter plant have not been completed, information as to its exact location is withheld, but a point has been selected with shipping facilities within easy access to save freight rates in making shipments abroad. The statement is made by a prominent officer of the company that their domestic engine building business will be concentrated at Milwaukee because of less liability to interruption from labor troubles in that city than in other large manufacturing centers. While they will continue to operate their two large Chicago plants, making a specialty of mining machinery, they do not contemplate enlarging them, the reason given being the inability of manufacturers to secure protection, even from the courts, in time of labor troubles. The company are very large employers of machinists. At the time the present machinists' strike began they had 6500 machinists on their pay rolls in Chicago, Milwaukee, Buffalo and Scranton. A considerable percentage of the strikers have returned to work since then, and the officers are quite confident that in a short time they will have their full force going.

New Pipe Mills.

PITTSBURGH, PA., July 10, 1901.—(By Telegraph.)—The S. R. Smythe Company, engineers and contractors, Park Building, Pittsburgh, are building at the present time no less than eight independent pipe and tube mills in different parts of the country. These new mills, with the daily capacity of each, are as follows:

	Tons.
Eastern Tube Company, Zanesville, Ohio.....	500
Wheeling Steel & Iron Company, Benwood, W. Va.....	400
Coatesville Rolling Mill Company, Coatesville, Pa.....	60
United States Tube Company, Buffalo, N. Y.....	60
Carnegie Tube Company, Carnegie, Pa.....	50
Longmead Iron Company, Conshohocken, Pa.....	50
Alabama Tube & Iron Company, Birmingham, Ala.....	50
The Aermotor Company, Chicago Heights.....	90

In addition to the above the Youngstown Iron Sheet & Tube Company are building large mills at Youngstown, Ohio, to roll iron tubes, and will have a capacity of about 300 tons a day. The La Belle Iron Works at Steubenville, Ohio, are building new steel pipe mills and will turn out from 200 to 250 tons per day. These independent mills will therefore have a daily capacity of close to 2000 tons of pipes and tubes.

The Sheet Conference.

PITTSBURGH, PA., July 10, 1901.—(By Telegraph.)—The sheet conference to be held in Pittsburgh on Thursday morning is being awaited with intense interest. Much depends upon the outcome of the conference, as President Schaffer of the Amalgamated Association claims that unless a speedy settlement is reached he will issue orders to have the men called out in all the mills of the constituent companies of the United States Steel Corporation where the Amalgamated Association have a foothold. However, there is not much chance of this being done, as both sides seem certain that a settlement of the trouble will be reached this week. This applies not only to the sheet strike, but also to the union mills of the American Steel Hoop Company, which have been closed down since June 29, because that concern refused to sign the Amalgamated scale for their nonunion mills.

Parties formerly connected with the American Bridge Company, a constituent concern of the United States Steel Corporation, are actively at work organizing a new corporation, to be entitled the National Bridge Company.

Machinists' Strike.

During the past week the most important event in the Machinists' Strike was the proposition made to the National Metal Trades Association by James O'Connell, president of the International Association of Machinists, through a third party—namely, the National Civic Federation of Chicago. The proposition was as follows:

The Machinists' Proposition.

"1. The question of wages to be arbitrated by districts, the arbitration board to be composed of three parties from each side, an umpire to be mutually agreed upon by the arbitration board.

"2. All machinists on strike to be reinstated, without prejudice, to their former positions, pending the settlement by arbitration.

"3. The hours of labor shall be 54 hours a week, which is not submitted for arbitration.

"4. The award of the arbitration board to date back to the time the men returned to work.

"5. Articles of agreement shall be signed by both sides agreeing to the above basis of arbitration.

"6. The above basis for settlement of the present strike shall not apply to firms, members of the National Metal Trades Association, or others, with whom we have made settlements."

This proposition was immediately considered by the officers of the association, who were a unit in wiring their rejection of the same. The second clause was not considered at all. The third clause was thought ridiculous, particularly since it conflicts with the claim to advance arbitration as predominating in the whole affair. In view of past events the fifth clause was considered to be decidedly objectionable, since any agreement looking to the arbitration of disputes would have but one binding party. The machinists have shown that their arbitration clause in former agreements cut no figure and had no influence upon their action. Since the manufacturers were then willing to abide by arbitration, but had no opportunity of exercising their choice, and since the machinists deliberately broke their arbitration stipulations, there is no good reason why any stipulation of this character should be again inaugurated. The sixth clause, besides its ambiguity, was rejected, since the settlement should be general, binding one and all.

INJUNCTIONS.

BOSTON, MASS., July 10, 1901.—(By Telegraph.)—An Order of Notice has been issued by the Superior Court, returnable July 18, upon application of the American Tool & Machine Company, for a temporary injunction to restrain G. E. Nickerson and others, officers of Boston and Hyde Park Unions of the International Association of Machinists, from visiting plaintiffs' place of business, from interfering with the workmen by threats, intimidation or other means, and from doing anything to hinder, impede or obstruct plaintiffs in the prosecution of their business. In the bill it is alleged that Nickerson and the other defendants are engaged in an effort to secure a nine-hour day for the members of the organization; that the streets in the vicinity have been patrolled by members of the organization, who have made significant gestures, used threatening language to employees and willfully, maliciously and continuously patrolled the streets in the neighborhood of plaintiffs' place of business for the purpose of interfering with the business of the plaintiffs.

MILWAUKEE.

The striking Milwaukee machinists filed their answer in the injunction case on the 8th inst. They deny the allegations of losses sustained by the Vilter Company, the complainants in the case, where the temporary injunction was granted, and return the charge of conspiracy with another that the Metal Trades Association is engaged in a conspiracy, and that the Vilter Company are, under cover, members of that conspiracy. The answer is signed by 30 members of the Machinists' Union, including Business Agent Holmes and Vice-President Mullberry.

Attorney John Toohey, who represents the machinists

in the suit, said, after filing the answer, that the matter would be allowed to take its course, as the machinists who were out for a nine-hour day did not propose to allow themselves to be side tracked by any legal questions, which is taken as an intimation that the machinists are satisfied with the present situation, and would make no attempt to change it, but let the injunction stand until it was taken up in regular course on the court calendar, in which case it will not come up for argument before the September term.

After denying the alleged damages suffered by the Vilter Company [this injunction was printed in *The Iron Age* two weeks ago], the defendants say that their stopping work was in pursuance of their legal rights and resulted from their inability to make a satisfactory contract with the plaintiffs for their services in the future, and not for the purpose or with the intention of causing the plaintiffs any damages. It is stated that the employees fully recognize the fact that the prosperity of the employer should redound to the mutual benefit of the employer and the employee, and the request made by the defendants of the plaintiffs, which included a nine instead of a ten hour day with no decrease in pay, was just and reasonable.

After setting forth that the international organization was an incorporated association and the efforts made and understandings reached prior to May 20 in relation to the nine-hour day, the answer brings the charge that the members of the Metal Trades Association have entered into a conspiracy to disrupt the international association, and "that said plaintiffs, the Vilter Company, under cover, are members of said conspiracy."

It is further said that in furtherance of the alleged conspiracy the "said league of conspirators" have caused to be published statements derogatory of the international association, with a view of discrediting the defendants in the minds of the public, "whose good will and moral support in the pending contest is recognized as of great value" by both parties.

Continuing the answer says: "Defendants specially deny that they or either of them have ever entered into any conspiracy of any kind to commit any of the various criminal offenses charged against them in the plaintiffs' complaint, or that they or any of them have used coercion, threats, or intimidation, or that they intended to do so in the future."

The fact that "pickets" were stationed in the vicinity of the shops is admitted, but it is claimed that said "pickets" are there simply to meet any strangers who might be brought here on misrepresentation by said plaintiffs, through said conspiracy of said plaintiffs and its coconspirators as aforesaid, and give them the correct information, and if possible through persuasion and argument win them over to the International Machinists' Association's side of the contention.

The defendants say that the assertion of the plaintiff that it has been necessary to board and lodge the men on the premises is so novel as to cause many workmen not of the strikers to gather around the plaintiffs' works out of a spirit of curiosity. In conclusion, the defendants deny each and every allegation of the complaint not admitted, and ask that the complaint be dismissed and the injunctive order vacated. It is probable that similar answers will be put in on the other injunctive cases.

KANSAS CITY.

Under date of July 6 the following press dispatch was received from Kansas City:

Judge Philips of the United States District Court, who, July 4, 1901, issued an injunction enjoining the striking machinists at the Riverside Iron Works from interfering with or intimidating that company's employees, to-day defined the limit to which the strikers could go in their efforts to induce men not to take their places.

"We would like to know," argued the strikers' attorney, "whether these defendants can talk to the men who take their places while they are on the street."

"We will not discuss the question of what constitutes moral suasion at this time," replied Judge Philips, firmly. "If I catch any of those men picketing the work-

men who go to or from this plant I shall consider it a physical demonstration calculated to intimidate."

The injunction was continued in force, and the attorney for the strikers was told that he could file an answer or an appeal.

CINCINNATI

In response to an application for an injunction which was made in the Federal Court before Judge Clark this morning by the J. A. Fay & Egan Company, and the American Tool Works Company, for an injunction against Harry Schilling, business agent for the machinists' union, and all other union officers, pickets, and strikers generally to enjoin them from in any way interfering with the plaintiffs' business, the court issued a temporary restraining order. While it is seen that there are but two of the manufacturing concerns engaged in the suit, it is understood that the action is to be taken by all the members of the Metal Trades Association individually. The Laidlaw-Dunn-Gordon Company and the Bickford Drill Company have brought similar suits in the Common Pleas Court, and it is not known whether these concerns will join the others before the Federal Court. The action was taken after negotiations between the Laidlaw-Dunn-Gordon Company and the strikers resulted in the rejection of all propositions of compromise on the part of the Laidlaw-Dunn-Gordon Company. This indicates that it will be war to the knife between the opposing interests.

New York and Vicinity.

The strike situation in New York and vicinity remains practically unchanged. All the shops are obtaining all the men they want, and are in a position to take their time concerning the hiring of further help. At Ampere and Plainfield and also in Brooklyn the works are running without any trouble whatever.

Dayton, Ohio.

The Stillwell-Bierce and Smith-Vaille Company wire us as follows: "Situation improving; men returning without any concessions."

At the National Cash Register Company the men will work nine hours, as they did before the trouble began, and the company reserve the right to employ or discharge men without the union's dictation. The molders' and metal polishers' department will be run in the future as open shops, union men and non-union men working side by side.

The Dayton Mfg. Company have brought suit against the Metal Polishers' Union for \$25,000 damages to establish individual liability.

Schanton, Pa.

A dispatch from the Dickson Mfg. Company of July 8 states: "Situation in machine shop unchanged; about 50 men hanging around shop this morning screwing up courage to apply for work. A few days more will bring them in. Strike at locomotive works in this city broke last week. Men going back without concessions of any kind. Believe this is a death blow to the strike here."

Indianapolis.

The following communication has been received from the Chandler & Taylor Company: "On May 20, the day the men went out, we made an offer to them of the nine-hour day and a 5 per cent. advance in wages. We had for many years been running nine and one-half hours, and our offer on May 20 to them was that we would give them the same pay for the nine-hour day as we had been heretofore giving for the nine and one-half hour day. This they rejected and went upon a strike which lasted five weeks. They returned to work on the basis of precisely the same proposition we made to them the day they went out, with the single exception that any overtime which they made between 6 and 10 o'clock should be paid for at the rate of time and one-half instead of time and one-quarter."

Cincinnati.

CINCINNATI, OHIO, July 8, 1901.—From present appearances the strike is just about over at Hamilton, Ohio. The whole situation there hinges on the action of the strikers at the Niles Tool Works, and at these shops it is confidently believed that this week will see nearly

if not all their men back at work on the old basis. Last Friday the nonunion men held a meeting at which the sentiment was strong to go back to their places. No definite resolutions declaring the strike over were passed, but the understanding was rather plain. Since then the men have been coming for conference in small groups, and this morning as a result nearly 70 machinists, among whom were six union men, presented themselves at the Niles shops and went to work. There are about 400 machinists employed in the Niles works, and to-day well on toward half of that number are working. The management say they have pretty positive information that 100 more men will come in to-morrow. Injunction suits against the strikers came up in the Hamilton courts to-day.

In Cincinnati the men keep drifting back slowly to some shops, while the gain at others is constantly going on. A gain of about 70 men at work in the city is the net result for the week. A number of additional suits for injunction against the strikers have been filed, but it is not the intention to push them to trial unless circumstances demand it.

A dispatch from S. R. Hollen, secretary of the local branch of the Metal Trades Association, says: "Big break to-day; 120 men return to work. Men holding meetings in various shops preparatory to returning."

Cleveland.

CLEVELAND, OHIO, July 8, 1901.—The Cleveland Punch & Shear Works have gained an important point in the injunction suit brought some time ago against several striking machinists to restrain them from placing pickets around the factory and intimidating the workmen. The court granted a temporary restraining order on the first hearing and the union filed a demurrer. Last Saturday Judge Stone overruled it. No evidence was taken and the case was submitted on affidavits. Judge Stone's decision was a lengthy one, as he cited a number of cases having bearing on the point at issue. He stated that there was no difficulty in ascertaining the law on the subject, but the point was to arrive at the facts of the case in question. Affidavits had been filed by a number of employees of the company reciting numerous instances where they had been addressed by pickets of the strikers in jeering terms; that threats of violence, such as being thrown into the lake or put into the hospital, had been hurled at them. In turn the strikers submitted affidavits denying positively the language imputed to them and that violence was offered.

Judge Stone said, in part: "It would seem from the affidavits of the strikers that the men at work were looking for trouble. The men who are out would have, I am convinced, but little respect for my judgment of men should I hold that the men at work were seeking trouble. The men who are out would be more likely to be looking for trouble. No one reading the affidavits can help but see that the methods used are intended to intimidate those at work. The fact that eight or ten able bodied, athletic men were present would tend to intimidate and keep from work those who would work. I quite agree with the doctrine that it is perfectly permissible for one man to meet another and persuade him by fair argument. But the posting of pickets is intimidation and interferes with the rights of those who would work, no matter whether the pickets are posted 10 feet from the plant or 1000. The temporary restraining order is granted pending the final hearing of the case."

Strike at Shipbuilding Plants.

Camden, N. J.

The strike at the New York Ship Building Company ended here about ten days ago. Twelve out of 100 men were taken back. The others' places had already been filled. No concessions were granted by the company.

Sparrow's Point, Md.

A dispatch from F. W. Wood, president of the Maryland Steel Company, Sparrow's Point, under date of July 10, states: "About 30 per cent. have returned, and more coming in every day. The conditions are the same as prior to the strike."

The Situation on the Pacific Coast.

SAN FRANCISCO, CAL., June 27, 1901.—The machinists' strike, as it is termed, practically involves all those employed in the iron trade of San Francisco and Oakland. It is of much greater comparative importance than the similar strikes in Eastern cities, as the industries connected with the iron business in their various branches employ between one-third and one-fourth of the workers in all the industries of these two cities, the vast majority being in San Francisco.

On April 8 the machinists of this city sent a communication to the employers setting forth their demands—to wit, a nine-hour day and 12½ per cent. advance on the payment per hour. There were other demands regarding increased pay for overtime and for Sunday and holidays and as to the number of apprentices that would be allowed in each shop, &c., but it all practically resolved itself into ten hours' wages for a nine-hour day. The machinists were backed up in their demands by all the other workers united with the Iron Trades Council—the boiler makers, pattern makers, molders, blacksmiths, core makers and steam fitters. The employers were given until May 1 in which to reply, but in the majority of instances no reply came. The employers contended, and still contend, that the time was too short, and that they had no opportunity to make arrangements so as to meet the altered condition of affairs. This means, of course, that they could not, if they would, arrange a schedule of prices to cover the increased cost of work under the nine-hour system and that they had contracts on hand taken under the old system and which cost them much more to finish. They could not afford to lose money on the contracts, which doubtless under the altered condition of affairs some of them would. As to what they might have done if they had not been given an ultimatum and such short notice, it is hard to say, but in a conversation with the manager of one of the largest works in the city that gentleman informed your correspondent that he considered the men should have asked for a nine-hour day at nine hours' wages, and that in course of time they would be working at the old wages again. He also said that the matter of unionizing shops was non-American, and that he had said so to divers of the men. On April 30 27 men from different shops met a committee representing the employers at Ruby Hall, but as these men declared that they could not do anything themselves in regard to the matter, the meeting came to nothing. Then committees from the various shops informed the employers that all matters pertaining to the strike should be settled by their Executive Board.

May 20, the fated day, came, and at 9.15 a.m. committees from the shops asked for an answer to the ultimatum from the International Association of Machinists, but received none. In other words, the employers, while willing to confer with their men, would do nothing through the union, and the men were resolved that no settlement should be made in any other way, so at 9.15 a.m., on May 20, the strike was on. The men went quietly to their homes and there have been no disturbances of any kind except some where a few apprentices were involved. Some spasmodic attempts were made by well meaning people to bring about conferences between employers and workmen, but all these have come to nothing. Both sides at date of writing are firm in their resolve, except that the machinists made it semiofficially known that they do not insist on unionizing their shops or on regulations regarding apprentices. But the shops are virtually unionized as it is, so that there is nothing to give up here.

The number of men that went out on May 20 was, in round numbers, 7000, of whom 4000 were machinists, and the rest members of the various iron trade organizations previously mentioned. The molders to the number of about 400 did not go out at first. They had not been ordered out by the national organization for one thing, and then they wished to finish valuable molds which otherwise would have been destroyed. This, of course, is much to their credit. But at length they finished the work on which they had been engaged, and as

there was nothing more for them to do they went out, too. There remain in the different shops where the strike is on about 2000 men, partly apprentices, partly handy men, those engaged in cleaning up machinery, porters, draymen, draftsmen, clerks and others. In some of the offices of the large foundries, &c., the usual clerical force is at work, and one would never suspect that anything particular was wrong. But every day there are less and less employed in this way as the necessity for their services ceases, and some places have a deserted look indeed. As the big shipyards are in the suburbs at the Potrero and at North Beach, the difference made by the strike is not as noticeable as it otherwise would be. A little work is being carried on, but really it may be said to be practically suspended in all nonunionized shops. And it is not only these that have been affected by the strike, but others that have had no trouble with their men have been obliged to let most of their hands go because their business consisted in supplying machine shops, &c., that had nothing more for them to do. One institution that I visited had to let most of their molders go for this reason.

The wages paid to machinists here have been \$3 to \$3.50 for the bulk of the men, though some especially skillful received as much as \$4 per day. These wages, it is claimed, are 25 to 50 cents per day more than is paid the same description of labor in the machine shops, foundries and shipyards of the East.

A detachment of boiler makers went down to Honolulu a couple of weeks ago. One employer with whom I spoke, and whose establishment is not involved in any way in the strike, claimed that young men, and a large proportion of the machinists were, he said, young men, could find employment in the country picking fruit. The strikers who are needy are supposed to get \$7 per week, but it is certain that this amount, \$35 for the five weeks of the strike, or \$140,000 for the 4000 machinists, has not nor could be paid, although some benefits, &c., have been held, and some money has arrived from various sources. A great many of the strikers feel their position keenly, though there is no sign of any weakening in the ranks as yet.

The number of establishments that are under strike is 71. They are as follows:

Union Iron Works.	Oriental Gas Engine Co.
Risdon Iron & Locomotive Works.	McCormick Bros. Iron Works.
W. T. Garratt & Co.	San Francisco Tool Works.
Fulton Engineering & Ship Building Works.	Jardine Machine Works.
Geo. E. Dow Pumping Engine Co.	C. K. Orton Machine Works.
Golden State & Miners' Iron Works.	P. F. Dundon's San Francisco Iron Works.
Meese & Gottfried Co.	United Engineering Works.
National Iron Works.	Hercules Gas Engine Works.
The Compressed Air Machinery Co.	Union Gas Engine Co.
The Pelton Water Wheel Co.	W. H. Birch & Co.
Vulcan Iron Works.	Oakland Iron Works.
Abner Doble Co.	Christie's Machine Works.
Keystone Boiler Works.	California Electrical Works.
Union Machine Co.	Wm. T. Brady Eureka Boiler Works.
Krogh Mfg. Co.	Reed & Cleve.
Western Foundry.	Columbia Machine Works.
Enterprise Foundry.	T. J. Moynihan.
C. H. Evans & Co.	American Tool Co.
Thompson Bros. Eureka Foundry.	California Saw Works.
Murray Bros.	William Edwards.
P. T. Taylor & Co.	Blennenhassett & Farmer.
Judson Mfg. Co.	Western Mfg. Co.
Joshua Hendy Machine Works.	H. C. Macaulay & Co.
Mechanics' Foundry.	Vincent Kingwell.
Griffiths & Howlett.	M. Greenberg's Sons.
Adam Schilling & Sons.	Globe Brass & Bell Foundry.
Byron Jackson.	California Pattern Works.
Payne's Bolt Works.	Thomas & Carlson.
F. A. Robbins Press Works.	San Francisco Pattern Works.
California Wire Works.	Best Mfg. Co. (San Leandro).
The Dobbert Mfg. Co.	A. T. Van Drake Machine Works.
Webber & Archer.	Payne.
McIntosh & Wolpman.	F. A. Thomson Co.
Etienne & Dillenburg.	Cyclops Engine & Machine Works.
	John Finn Metal Works.
	Joseph Wagner Mfg. Co.
	John R. Murch.
	WASHINGTON.
Moran Bros. Co., Seattle.	Northwestern Iron Works, Seattle.
Vulcan Iron Works, Seattle.	A. F. Hutton, Seattle.
Puget Sound Machinery Depot.	Manne Iron Works, Seattle.
Seattle.	

Washington Iron Works, Seattle.
Heffernan Engine Works, Seattle.
Seattle Machine Works, Seattle.
Commercial Sheet Boiler Works, Seattle.
Variety Iron Works, Seattle.
Queen City Boiler Works, Seattle.
Westerman Iron Works, Seattle.

In Oregon the men are working nine hours a day at nine hours' wages, waiting the results of the strike in the East.

Among the work stopped by the strike was that on \$10,000,000 worth of Government work—the "Ohio," the "California," the "South Dakota," and two torpedo destroyers as yet unnamed. In all there is \$10,000,000 worth of Government contracts held up by the strike.

The shops that have yielded to the demands of the strikers are mostly small, employing only a few men, 100 at most, as I am informed—that is, 100 machinists. These firms are the following:

P. F. Chere.	R. I. Brown.
American Can Co.	Herman Safe Co.
Gallo Machine Co.	Halls Machine Works.
F. T. Mathews.	Economist Gas Engine Co.
W. H. Ohmen.	Williams & Orten.
Union Can Co.	Speck & Thomas.
Crown Gold Milling Co.	Hawkins Mfg. Co.
Mower & Ruffcorn.	Simonds Saw Co.
Slonville Machine Co.	Toulouse & Deloroux.
Chas. Fay Co.	H. R. Worthington.
Dr. J. E. Twist.	Hicks Gas Engine Co.
E. O. Bennett.	P. Nobles.

We have here 24 in all. Besides these, the Rix Engineering Company, the Van Drake Machine Company, the Dibbert Mfg. Company, McIntosh and Wolfman, the Wagner Mfg. Company, Murch & Grey, Cyclops Engine & Machine Works, and J. Hammond were unionized, but have gone to the Metal Trades Association. Some of those unionized have specialties, such as the manufacture of safes, machinery used in viticulture, &c. And there are names that are not found on either list, such as Stoger & Ker and the Pacific Saw Company. In some of these the men have been on the nine-hour system before the agitation. In some of the small shops the men have been weeded out by a sort of natural selection and paid according to their ability. They have to turn their hand to everything, whereas in the larger establishments a man may be employed all the time on a planer, a shaper or a lathe. In these small shops they have no use for a man who cannot earn at least \$3 a day.

The lines are being drawn sensibly tighter day by day. The Metal Trades Association are entering on a practical boycott of the shops that are unionized, and the latter will soon find it difficult if not impossible to obtain supplies from the places where the strike is on, or indeed to have any relations with them whatever. The employers justify this by claiming that they are only using the tactics of the strikers themselves. It is war to the knife.

The employers state this as the situation. They are willing to abide by the issue of the struggle in the East, and whatever terms the machinists get there will be given by the employers on this coast. And they invite the men to return to work and abide the issue on these lines.

The Waukesha Steel Sheet Company.—CHICAGO, ILL., July 9, 1901.—(By Telegraph.)—The Waukesha Steel Sheet Company have been organized at Waukesha, Wis. They will build mills for rolling steel sheets and black plate for tinning. They expect to have three mills running on black plate by October 1 and to be making tin plate by December 1. A. M. Crane & Co., the Rookery, Chicago, will sell the product.

The Shelby Steel Tube Company.—The report has obtained currency that the National Tube Company are to absorb the Shelby Steel Tube Company, the identity of the latter being lost. This is not correct. The United

States Steel Corporation acquired the Shelby Steel Tube Company through an exchange of securities, and the National Tube Company will operate the Shelby Steel Tube Company under a contract with the United States Steel Corporation. There will be, however, no merger of the National Tube Company and the Shelby Steel Tube Company.

A. M. Crane & Co., The Rookery, Chicago, have incorporated under the laws of the State of New Jersey, with a capital stock of \$100,000. They are authorized by their charter to conduct a general manufacturing and commercial business. They are now operating a factory in Chicago making hardware specialties. They also represent manufacturers of iron and steel products and railway supplies. The officers of the company are as follows: A. M. Crane, president; J. M. Maris, vice-president; W. A. Green, treasurer; W. B. Templeton, secretary, and L. J. Gordon, assistant treasurer.

The Bryan Vacuum Molding Machine Company of Lockport, N. Y., have been organized to manufacture and sell the Bryan molding machine and the foundry accessories necessary to be used in connection with it. It is a pattern drawing machine and is capable of use with the ordinary wood patterns. It is not proposed to build a plant at present. The machine will be on the market within the next two weeks. The Eastern representatives are the Power Specialty Company of 126 Liberty street, New York, where one of the machines may be inspected.

The Fore River Ship Company have taken a contract to build a steel schooner with seven masts from plans prepared by B. B. Crowninshield, designer of the yacht "Independence." The craft will cost about \$250,000, and among the subscribers to the sum necessary for construction are Thomas W. Lawson, Jenkins Brothers, the Consolidated Coal & Coke Company, and B. B. Crowninshield.

The erection of a bridge across the St. Lawrence River, connecting St. Helen's Island with the City of Montreal, is under consideration. The estimated cost of the bridge, with terminals, is \$9,000,000.

The Secretary of the Navy has approved a report of the Board of Naval Construction recommending the discontinuance of the use of fire proof wood for decks and for all joiner work below the protective decks on vessels having such decks, and on all vessels below the berth deck. Wood treated by the fire proofing process will be used, however, in torpedo boats and torpedo boat destroyers, and will be painted. In other ships metal will be used in place of wood wherever possible. The recommendation of the board was based on reports received concerning the utility of fire proof wood. A bonfire was made of fire proof wood taken from the decks of the "Helena" at Manila. The surgeon of the "Wisconsin" complained that mold gathered on the fire proof wood of his sick bay. The reports of Naval Constructor Baxter, who made tests at Boston, showed that the wood, when exposed to the weather for a week, loses 50 per cent. of its fire proofing qualities, and that the fire proofing process made wood brittle.

At a meeting of the stockholders of the Carborundum Company of Niagara Falls Vice-President F. W. Haskell was promoted to the presidency of the company. In taking this office Mr. Haskell succeeds E. G. Acheson, who is the discoverer of the process by which carborundum is made. For some little time Mr. Haskell has been the chief executive officer of the company. Mr. Acheson remains with the company as consulting engineer, but will give much of his time to his artificial graphite interests. Secretary Rayner and Treasurer Manley were re-elected to the same offices by the stockholders of the Carborundum Company.

Report has it that the strike at the works of the Reading Iron Company, Reading, Pa., will probably be settled this week.

A Slight Decline in Pig Iron Production.

So far as existing plant is concerned, our capacity for the production of pig iron is now pretty close to the maximum. A few new furnaces will still come in during the next few months, notably Neville Island, which started since the opening of the month; a new South Chicago, a new Sharon, a new Pioneer in Alabama, Port Oram in New Jersey, Warwick in the Schuylkill Valley, and Colorado in the West. But the old plants are pretty well strained to the utmost, and we may at times witness a good deal of blowing out for repairs. Stocks have again shown some decrease.

The weekly capacity of the furnaces in blast on July 1 compares as follows with that of the preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
July 1, 1901.....	249	310,950
June 1.....	252	314,505
May 1.....	256	301,125
April 1.....	250	296,676
March 1.....	248	292,899
February 1.....	245	278,258
January 1.....	238	250,351
December 1, 1900.....	211	228,846
November 1.....	301	215,304
October 1.....	213	228,169
September 1.....	228	231,778
August 1.....	240	244,426
July 1.....	234	238,413
June 1.....	233	236,376
May 1.....	232	235,850
April 1.....	291	289,482
March 1.....	293	292,643
February 1.....	296	296,014
January 1.....	280	284,186
December 1, 1899.....	288	296,959
November 1.....	277	288,523
October 1.....	265	278,650
September 1.....	257	267,325
August 1.....	244	267,673
July 1.....	237	263,363
June 1.....	230	251,062
May 1.....	217	250,095
April 1.....	205	245,746
March 1.....	192	228,195
February 1.....	195	237,689
January 1.....	200	243,516

The condition of the charcoal furnaces at the beginning of the month was as follows:

Charcoal Furnaces in Blast July 1, 1901.

Location of furnaces.	Total No. of stacks.	No. in blast.	Capacity per week.	No. out of blast.	Capacity per week.
New England.....	7	3	280	4	360
New York.....	3	1	290	3	250
Pennsylvania.....	13	0	0	13	574
Maryland.....	4	1	113	3	332
Virginia.....	3	1	40	2	140
Ohio.....	8	2	116	6	346
Kentucky.....	3	0	0	3	200
Tennessee.....	5	1	535	4	360
Georgia.....	4	1	270	3	783
Alabama.....	4	4	1,133	0	0
Michigan, Missouri and Wisconsin.....	11	7	4,218	4	949
Texas.....	4	1	162	3	730
Totals	69	22	7,157	47	5,022

As compared with previous months the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week. Gross tons.
July 1, 1901.....	22	7,157
June 1.....	22	7,514
May 1.....	22	7,210
April 1.....	22	7,910
March 1.....	22	8,074
February 1.....	31	8,325
January 1.....	32	7,097
December 1, 1900.....	32	6,779
November 1.....	30	7,923
October 1.....	31	8,248
September 1.....	31	8,227
August 1.....	31	8,395
July 1.....	32	8,492
June 1.....	27	7,605
May 1.....	25	6,864
April 1.....	29	7,888
March 1.....	29	7,047
February 1.....	32	8,004
January 1.....	30	7,487
December 1, 1899.....	30	7,511
November 1.....	29	7,118
October 1.....	25	6,289
September 1.....	24	5,665
August 1.....	22	6,186
July 1.....	20	6,018
June 1.....	16	4,943
May 1.....	20	4,846
April 1.....	17	4,777

March 1.....	16	4,390
February 1.....	17	4,967
January 1.....	20	6,036

The new charcoal furnace at Buffalo started on the 18th. Muirkirk was in on the 1st, but has since blown out. In Ohio, Bloom and Vesuvius stopped. Attalla, in Alabama, blew in on the 24th ult.; in Tennessee, Bear Spring went out to reline, and in Georgia Rome stopped for repairs on the 25th ult.

The condition of the coke and anthracite furnaces at the beginning of the month was as follows:

Coke and Anthracite Furnaces in Blast July 1, 1901.

Location of furnaces.	Total No. of stacks.	No. in blast.	Capacity per week.	No. out of blast.	Capacity per week.
New York.....	14	5	6,336	9	4,357
New Jersey.....	8	3	1,981	5	2,059
Spiegel.....	3	3	561	0	0
Pennsylvania:					
Lehigh Valley.....	27	15	9,229	12	5,219
Spiegel.....	1	1	183	0	0
Schuylkill Valley.....	13	9	7,223	4	1,840
Upper Susquehanna.....	2	1	1,121	1	336
Lower Susquehanna.....	9	6	5,222	3	981
Spiegel.....	1	1	500	0	0
Lebanon Valley.....	12	12	9,555	0	0
Pittsburgh District.....	30	28	66,98	2	3,958
Spiegel.....	1	1	2,199	0	0
Shenango Valley.....	15	14	19,860	1	1,033
Western Pennsylvania.....	19	13	16,949	6	2,715
Spiegel.....	1	1	930	0	0
Maryland.....	5	4	6,278	1	1,200
Wheeling District.....	9	8	11,073	1	2,140
Ohio:					
Mahoning Valley.....	15	4	29,014	1	1,800
Central and Northern.....	14	14	25,189	0	0
Hocking Valley.....	2	2	830	0	0
Hanging Rock.....	18	8	4,461	5	1,607
Illinois.....	17	16	32,032	1	1,000
Spiegel.....	1	1	1,071	0	0
Minnesota.....	1	0	0	1	763
Wisconsin.....	5	3	3,639	2	1,176
Missouri.....	1	0	0	1	579
Colorado.....	2	2	2,995	0	0
The South:					
Virginia.....	21	14	8,036	7	3,523
Kentucky.....	5	4	1,583	1	685
Alabama.....	36	25	22,445	11	6,800
Tennessee.....	15	9	6,531	6	2,697
Georgia.....	1	0	0	1	460
North Carolina.....	2	0	0	2	437
Totals	821	227	308,793	84	47,876

In comparison with previous months the record of the coke and anthracite furnaces stands as follows in gross tons:

	Number in blast.	Capacity per week.
July 1, 1901.....	227	308,793
June 1.....	223	306,991
May 1.....	223	293,915
April 1.....	225	288,766
March 1.....	223	284,825
February 1.....	214	278,358
January 1.....	201	243,254
December 1, 1900.....	179	222,067
November 1.....	171	207,381
October 1.....	188	214,921
September 1.....	197	222,551
August 1.....	209	236,181
July 1.....	253	274,921
June 1.....	266	268,771
May 1.....	267	266,956
April 1.....	262	261,644
March 1.....	264	262,596
February 1.....	264	260,010
January 1.....	250	256,729
December 1, 1899.....	253	260,448
November 1.....	248	261,409
October 1.....	241	272,428
September 1.....	238	261,070
August 1.....	223	261,483
July 1.....	217	257,345
June 1.....	204	249,119
May 1.....	197	245,249
April 1.....	188	240,969
March 1.....	175	223,865
February 1.....	178	222,073

There were blown in during June, Buffalo in New York, Sharpsville in the Shenango Valley, Zanesville and River furnaces in Ohio, No. 9 South Chicago of the Illinois Steel Company, Chattanooga in Tennessee, Watts in Kentucky and Pulaski in Virginia. In the latter State the cutting off of a part of the coke supply reduced the normal product by at least 10,000 tons during June. In that month there were blown out Topton in the Schuylkill Valley, No. 2 Bellaire in the Wheeling district, Lawrence in the Hanging Rock region, Mattie in the Mahoning Valley and Cumberland in Tennessee.

Furnace Stocks.

The position of furnace stocks, sold and unsold, as reported to us, was as below on July 1, the same fur-

naces being represented as in former months. This does not include the holdings of the steel works producing their own iron:

Stocks,	Feb. 1.	Mar. 1.	April 1.	May 1.	June 1.	July 1
Anthracite and Coke,	469,528	455,840	398,712	369,251	338,618	327,761
Charcoal,	73,236	80,003	75,168	75,037	78,910	64,897
Totals . . .	536,764	536,443	476,875	438,288	407,733	392,598

Packing Goods for Export.

In the annual report prepared for the 1900 volume of "Commercial Relations," which is issued yearly by the Bureau of Foreign Commerce of the Department of State, Consul Fleming of Edinburgh has embodied suggestions as to proper methods of packing many classes of goods for export trade. By way of introduction Consul Fleming says:

I have undertaken to gather information and collate opinions of manufacturers, importers and exporters, and well informed shippers, casemakers and stevedores in this district on the subject of packing goods. This information and these opinions relate to imports from and exports to nearly all countries, covering many kinds of merchandise. This work has been done with the idea that possibly American manufacturers and shippers will derive, from the facts and views stated, some benefit in the way of suggestion. At the risk of giving much that may be superfluous, I have gone into details. No comparison is attempted of the methods of packing in different countries, the purpose being to describe or indicate the best method, irrespective of the country in which it is practiced. But there are some exceptions to this rule, wherein American packing is directly commented upon.

With reference to the packing done by United States manufacturers and other producers and the export houses, little fault is found with it, especially of machinery, hardware and wooden ware, bottled and canned fruit, and catsups, sauces, and the like. Some fault is found with the American packing of clocks, bicycles and bicycle parts, wood pulp, hams, cottonseed meal, rosin, tobacco, and a few other articles. In most cases the complaints relate to defects which could easily be remedied.

In these paragraphs, the words following the figure (1) denote the more important forms in which an article is shipped, the most common form being stated first; the matter following the figure (2) describes or indicates the method of packing considered by shippers and importers to be the best, or gives the opinion commonly held here regarding the way packing is now done. Where there is practically only one form of package, or only one way in which an article is prepared for shipment, the figures are omitted, and the matter relates to the best method of packing, or some feature of it, or comments on present methods. I should add that, although the export case universally recognized as the best for all goods requiring special protection from moisture is a tin lined or zinc lined case, where the word case is used, the ordinary wooden case is meant, unless otherwise stated.

The suggestions given by Consul Fleming, so far as they relate to articles of general interest, are as follows:

Bicycles.—As a rule, the material of which American crates are made lacks the proper strength. The same is true of the cases in which bicycle parts are shipped. Solid crates and cases are required, as rough handling is always to be expected.

Bolts and Nuts.—1. Boxes, bags, packages. 2. Extra strong cases and tight packing necessary, owing to the weight. Bolts shipped in bags are sometimes damaged by water and dampness and otherwise.

Clocks.—In many American cases the wood protection is too slight. Good and strong material should be used.

Copper Ware.—Extra strong cases are required, and they should be of moderate size.

Cordage.—1. Bales, bundles, cases. 2. Bales bound with the same material and hooped with iron.

Grindstones.—1. Barrels, cases. 2. Put in strong barrels of a size suited to the diameters of the stones and tightly pack with shavings or straw.

Handles.—1. Cases, crates, bags, bundles. 2. Handles in any sound case are always secure enough, as are short handles in bags. To put in bundles is poor packing, unless the ends are very firmly bound. Those from America are cased and come in first-rate condition.

Hardware.—1. Cases, barrels, crates, packages. 2. Cases from the United States are notably strong. The best material is used in making them.

Hoops.—1. Bundles, bales, coils. 2. Largely put up in bundles of moderate weight, which are bound with their own material.

Implements.—Well made cases suited to the goods, such as are now used by American exporters in this line. It is the common testimony that all implements from the United States arrive in better condition, as a rule, than those shipped by English and Continental makers.

Iron Ware.—1. Cases, blooms, bundles, crates, barrels. 2. As with general hardware, the cases must be strongly made and secured with iron bands. They are now, as a rule, quite satisfactory, especially those coming to this market from the United States.

Machinery.—1. Cases, crates, pieces. 2. The best practice in packing machinery—heavy or light—is to firmly fix every piece to the case, either by bolts going through the case, or by battens arranged inside to securely lock the various pieces in position. With heavy machinery, no loose material should be used in any case. The American, as well as the Scotch, packing of machinery in general has been on this plan, and is everywhere commended.

Nails.—1. Bags, kegs, packages, boxes. 2. Of course, kegs are a better protection from dampness than bags, but bags are more easily handled and are almost universally used, not for this reason only, but for the more practical one of economy. Bags of nails for Great Britain should always contain 112 pounds each.

Netting Wire.—1. Rolls, packs, bundles. 2. Mostly in moderate size rolls. It is important that these be firmly and smoothly fastened at the outer edge.

Tools.—In cardboard boxes, packed in strong cases of convenient size bound with hoop iron.

Tubes.—1. Bundles, cases, pieces. 2. At most European ports there is a decided objection to heavy bundles of iron or steel or other metal.

Twine.—1. Cases, bales. 2. The practice is to make up $\frac{1}{2}$ -pound balls in parcels of 25 or 30 pounds, and pack in cases containing not more than 500 pounds lined with water proof paper.

Wheels.—1. Crates, cases. 2. The American packing is regarded as excellent, the wood protection being as complete and substantial as could be desired.

Wire.—1. Reels, bundles. 2. The obvious requirement is to perfectly secure the ends of the wire. Yet this is not always done.

Francis Boyd, president of the Shadbolt & Boyd Iron Company of Milwaukee, Wis., died on June 25 at his summer home at Fox Point, Wis., from a complication of diseases. He was a native of Elkhorn, Walworth County, Wis., where he was born 60 years ago. The Shadbolt & Boyd Iron Company, of whom Mr. Boyd was president, are one of the largest and oldest concerns of their kind in Milwaukee. They were established in 1850 and have steadily increased their business until they have an output of over \$1,000,000 worth of goods annually. Mr. Boyd was president of the Belle City Malleable Iron Company of Racine, Wis., until the company sold out to Chicago capitalists two years ago. He was a heavy stockholder in iron mines in the Lake Superior region.

Uriel A. Murdock, who died of old age on July 5 at his country home at Southampton, L. I., was born at Carver, on Cape Cod, Mass., in 1810. He went to New York City in 1830 and engaged in the iron business. Mr. Murdock was at one time owner of the Montour Mills at Danville, Pa., and was also a partner of George Peabody & Co. in their rail importing business. For several years he was president of the Continental National Bank of New York.

MANUFACTURING.

Iron and Steel.

The National Tube Company have decided to make some important improvements at the Youngstown Works, at Youngstown, Ohio. The present steam power plant used in operating the finishing departments will be thrown out and a modern electric plant installed. The contracts for this plant have already been placed, the generators and motors going to the Westinghouse Electric & Mfg. Company, while the contract for a large engine has been given to the Skinner Engine Company of Erie, Pa. There has recently been completed at the Youngstown works an up to date coupling shop, in which all the couplings required for the Youngstown works are now being made. Heretofore the supply of couplings for this plant has been obtained from one or the other department plants of the National Tube Company. The improvements now under way at these works will require from two to three months to complete. Other changes in equipment are in view, and all will be made with the object in view of making the Youngstown works thoroughly modern in equipment and capable of turning out tubular goods in maximum quantities and at minimum cost. The Youngstown works are in charge of W. L. Kaufman, manager, who has been connected with the works for many years.

The Jupiter Steel Company, with main offices in Boston, Mass., have purchased six acres of ground at Carnegie, near Pittsburgh, and propose to erect a works for the manufacture of castings from scrap. Under the patents of this company steel castings and forgings can be made, it is claimed, from scrap at low cost, and it is said the product of the new process will weld perfectly and that hard or soft castings can be made as desired. The new plant is expected to be ready in from four to six months. William J. Wilson, constructing engineer, with offices in the Hamilton Building, Pittsburgh, will have charge of the building of the plant.

The Pittsburgh Steel Company, to which we have fully referred before, have been granted a charter with a capital of \$2,000,000. Wallace H. Rowe is president, and the company are drawing plans for the building of basic open hearth steel works, rod, wire and nail mills, at Monessen, on the Monongahela River. Some contracts for equipment have already been placed.

The cold rollers at the Humbert works of the American Tin Plate Company, at Connellsville, Pa., have struck for an increase in wages. After the present stock of black plate is used up the mill will have to close down unless a settlement of the trouble is made in the meantime.

The three Youngstown mills of the Republic Iron & Steel Company, these being Brown-Bonnell Works, Hasletton Works and Mahoning Valley Works, which were closed last week for inventory and repairs, started up on Monday morning, July 8. As little time as possible was lost, for the reason that the Republic Iron & Steel Company are full of orders and need the product of their mills to meet the heavy demand for their products.

The American Steel & Wire Company blew in their Neville No. 1 Furnace, at Neville Island, Pittsburgh, on Wednesday, July 3. The stack started off very nicely and it is expected ultimately to turn out 600 tons of metal per day. Plans were drawn by American Steel & Wire Company, before being taken over by United States Steel Corporation, for the building of six blast furnaces at Neville Island, all to be duplicates of No. 1. However, it is not known now whether any more furnaces will be built or not.

Hall Furnace of the Republic Iron & Steel Company, at Sharon, Pa., has been closed down while a new blowing engine is being installed. The furnace will be out three or four weeks.

The Sharon Steel Hoop Company, Sharon, Pa., makers of hoops, bands and cotton ties, signed the Amalgamated Association scale last week.

The Amalgamated Association have refused to make a special scale with the American Steel Hoop Company for the 8-inch mill of the Union Works, at Youngstown, Ohio. This plant was operated last year under a special scale, but on account of the strike this year the Amalgamated Association have refused to grant a similar concession.

Exclusive of the engines and pumps, which are apparently in good condition, Crumwold Furnace of the Reading Iron Company, at Emmaus, Pa., was destroyed by fire July 2. The furnace only recently went out of blast.

Notices have been posted in the four mills of the Susquehanna Iron & Steel Company, at Columbia, Pa., stating that on and after Monday, July 22, the company will pay an advance of 25 cents per ton for puddlers, increasing their wages from \$3.50 to \$3.75 per ton.

Muirkirk Furnace, at Muirkirk, Md., blew out on the 6th inst.

The Talladega Furnace of the North Alabama Coal & Iron Company is to go into blast next month.

S. Frank Eagle, vice-president of Minerva Pig Iron Company, Milwaukee, Wis., has leased Paducah Furnace, at Paducah, Ky., for \$3600 per year, with an option of buying for \$60,000.

Mr. Eagle has taken charge of the furnace, and arrangements are now being made to incorporate a company to operate it.

The Philadelphia & Reading Coal & Iron Company are about to start the erection of another addition to their machine shops at Pottsville, Pa. The contract for the new building has been awarded to local bidders.

The Attalla Furnace of the Eagle Iron Company, Attalla, Ala., was blown in June 24.

The Buffalo Furnace Company, Buffalo, N. Y., blew in their Buffalo Furnace June 23.

It is announced that the John Peters Iron Company, Ironton, Ohio, may start their Lawrence Furnace Aug. 15.

The Claire Iron Company, Bloom Switch, Ohio, expect to blow in their Bloom Furnace the present week.

The Bear Spring Furnace, at Bear Spring, Tenn., was blown out June 30 for repairs.

General Machinery.

C. A. Thompson has moved his office and warerooms from 615 North Fourth street, St. Louis, to 516 North Third street. In his new location he will add at least one hundred per cent. to his warerooms, and will be able to carry a full assortment of the several lines which he controls and represents, including the Acme flexible stay bolts, Pickering Spring Company, the Niles Tool Works Company, the Otis Steel Company, and B. M. Jones & Co., et al. The general offices will be on the first floor. A private office has been fitted up on the second floor which is handsomely furnished, the side walls being decorated with red burlap with a wainscoting of green burlap. Antique oak wood work is used and the general effect is very pleasing. While Mr. Thompson has been in business on his own account for only a few years, he has built up a large and growing clientele among the railroads and machine shops, and his recent move into larger quarters is good evidence of the increase in his business.

The Locke Machine Works, Bradford, Pa., suffered a \$12,500 loss by fire June 29, with \$4200 insurance.

The Westinghouse Electric & Mfg. Company of Pittsburgh are the lowest bidders at \$14,715 and will receive the contract for supplying the dynamos and engines for the annex building of the Interior Department at Washington, D. C.

The West Penn Foundry & Machine Company, at Avonmore, Pa., builders of roll and rolling mill machinery of all kinds, are doing a very large business, and find it necessary to increase their capacity. They are building an addition to the machine shop, 75 x 100 feet, and will put in a number of modern iron working tools, including one 12-foot boring mill, one 36-inch lathe, one 27-inch and one 22-inch, one planer and one shaper. The company are also installing an electric light plant.

The Chase Machine Company, Cleveland, Ohio, recently shipped to Fairport, Ohio, a steam hoisting engine of novel design, as part of the installation of a rapid fueling plant.

The Toledo Machine & Tool Company, Toledo, Ohio, manufacturers of presses, dies, punches, shears and other sheet metal tools, have shipped a number of press punches to England and Scotland, and have been awarded a contract by the United States Government for the presses for the machine shop that is being equipped at the Government Arsenal, at Rock Island, Ill. The concern made shipments in June of nine full carloads of special machinery, in addition to a large number of smaller shipments. The carload shipments were sent to Leavenworth, Kan.; Quincy, Ill.; Alton, Ill., and to Pittsburgh. This concern are now making the equipment for three new shovel plants, which will be shipped within 90 days.

D. Saunders' Sons, Yonkers, N. Y., manufacturers of pipe threading and cutting machinery, have incorporated under the same name.

The W. J. Carlin Company, Pittsburgh, dealers in steel works' and rolling mill machinery, steam shovels and contractors' plants, have purchased the plant of the Springfield Rolling Mill Company, at Springfield, Ohio; also the plant of the Turner Engineering Company, at Bucyrus, Ohio, with the intention of dismantling same.

The Union Mfg. & Specialty Company, recently incorporated, will this week take over the business heretofore known as the Union Mfg. Company. The new company will continue the manufacture of foot power grinding machines and lathes, and hardware specialties, at 506 and 508 Genesee street, Buffalo, N. Y., and will be under the same management.

Francis S. Babbitt's machine shop in Taunton, Mass., was burned June 27, causing a loss of \$10,000 to the four occupants. Mr. Babbitt was one of the heaviest losers, but his property was insured.

The Baker & Shevlin Company, founders and machinists, at Saratoga Springs, N. Y., who were recently incorporated as successors to the firm of Baker & Shevlin, have taken possession of the plant and have elected the following officers: James H. Baker, president; George F. Shevlin, vice-president; Frederick H. Baker, treasurer, and George F. Begnall, secretary.

The S. M. York Machinery Company of Cleveland have purchased the complete equipment of the factory of the Akron Motor Carriage Company, who have recently discontinued business. The equipment consists of 30 lathes, 22 drill presses, 10

automatic screw machines, 7 milling machines, 3 cut off machines, 2 shapers and a miscellaneous lot of small machinery; also a complete plating outfit of large capacity. The machinery will be sold from the company's warehouse in Cleveland.

Work on the new plant of the Wellman-Seaver Engineering Company in Cleveland is progressing rapidly. The pattern shop of the plant will be completed about July 15 and the large machine shop will be ready for business about August 15. As soon as the plant is completed it is the intention of the company to run a double shift of men in order to take care of a number of important contracts.

Engines and Boilers.

Last week the extensive boiler works operated by the William B. Pollock Company of Youngstown were totally destroyed by fire. The loss is heavy and is only partially covered by insurance. This firm bought some time ago a large site of land on which work has been started for a very extensive foundry and machine shops. This plant, however, will not be available for several months, the firm having only recently gotten in the price for the new buildings. All efforts will now be put forth to complete the new works as quickly as possible.

The Oil City Boiler Works, Oil City, Pa., manufacturers of Geary water tube boilers, have sold 300 horse-power boilers to the Paris Gas Light & Coke Company, Paris, Ill.; three 300 horse-power boilers to the Rock Island Plow Company, Rock Island, Ill.; two 150 horse-power boilers to the Grinnell Electric Light & Heat Power Company, at Grinnell, Iowa.

The Sharon Boiler Company, Sharon, Pa., will build a 60-foot addition to their main shop, which is 100 feet wide. The company will also build a power house 30 x 40 feet. An Ingersoll-Sargent air compressor has been purchased to supply compressed air for pneumatic tools in the works. The Sharon Boiler Company have orders on their books for a great many horse power boilers, and find it necessary to enlarge their works, to take care of their increasing business.

The Kewanee Boiler Company, Kewanee, Ill., have increased their capital stock from \$200,000 to \$300,000.

The American Locomotive Company, 25 Broad street, New York City, advise us that it is their intention to increase the capacity of all their works as rapidly as it can be done.

Buildings and Bridges.

The New England Structural Company of Boston will furnish the steel framework and ornamental ironwork for the new ten-story Walker Building on Boylston street, Boston.

The officers who were re-elected at the annual meeting of the Structural Iron & Steel Company, held at Baltimore, July 1, are W. T. Stilwell, president; J. W. Leroux, vice-president and general manager; E. A. Frink, chief engineer; Layton F. Smith, secretary, and Jacob Ochse, treasurer. An annual dividend of 6 per cent. was declared.

Foundries.

Thomas Carlin's Sons Company, Allegheny, Pa., manufacturers of engines, boilers and pumps, hoisting engines, contractors' machinery, grinding pans, rolling mill machinery of all kinds, and shears, are having a steadily increasing business and have found it necessary to start another foundry. This firm now occupy about 1500 feet frontage on River avenue, Allegheny. When they moved their works from down town to the present location, about ten years ago, the firm occupied only 200 feet frontage. Their additional foundry will employ from 50 to 100 more men and will increase their output very materially.

The American Malleable Casting Company, who are building a large plant at Chicago Highlands, Ill., and whose main office is in the Chamber of Commerce Building, Chicago, are so far advanced that they are prepared to take contracts for malleable castings.

Hardware.

The Wilcox Mfg. Company, Aurora, Ill., have let a contract for the erection of a new building to be used as a press room. The building will be of brick, 50 x 150 feet, and its erection is found necessary on account of the rapidly increasing business of this concern. The press room at present occupied by the company is the same dimensions as the one they are about to build, so that the company will be able to double their output in this department as soon as the new building is completed. The new building will be a model one, being light and airy, and the company will in its erection follow out the plan adopted by them of making it as convenient and pleasant for their employees as is consistent with good discipline.

Mersfelder-Volke Company, Newark, N. J., have made extensive alterations in and additions to their factory, and are now in a position, they advise us, to serve the trade promptly and efficiently. They manufacture about 15 styles of tack claws, screw drivers of all grades from the finest mechanics' to the ordinary household drivers, cake turners, mincing knives, toilet rollers, can openers in large variety, ice chisels and picks, cold chisels, &c.

Miscellaneous.

The Pittsburgh Time & Signal Company of Pittsburgh have been chartered with a nominal capital of \$1000, "for the purpose of furnishing and regulation of time, for the protection of property from fire and burglary, for the watchman and messenger

service, and for the transmission of sounds and signals and variable electromotive forces." The company have chartered to operate in all of the counties of the State, and applications have been made for similar quarters in West Virginia, Maryland and Ohio. The capital is \$1000. The directors are William T. Speer, S. C. Strutz, J. A. Koch, J. T. Speer and C. F. Schaefer of Pittsburgh.

The S. Obermayer Foundry Supply Company, Cincinnati, Ohio; Chicago, Ill., and Larimer, Pa., have secured the contract for the entire equipment of the Etna Smelting & Refining Company's new plant, Cincinnati, Ohio, and among numerous other contracts one from the United States Government aggregating upward of \$5700, for Seattle, Wash. The company's plant at Cincinnati was shut down for a brief period to make necessary repairs and for taking inventory; nevertheless it is expected that the month of July will be the banner month in the history of their business.

I. B. Williams & Sons, Dover, N. H., manufacturers of oak tanned leather belting, etc., will considerably enlarge their present plant by the erection of several new buildings, which will be equipped with new and up to date machinery.

The Carbo-Mangan Company, recently incorporated with a capital of \$100,000, have leased the Seabury building at Nyack, New York, which they will equip with furnaces and the necessary machinery for making carbo-mangan, a bath for tempering steel tools. The company claim that the bath not only prevents water cracks in steel but refines the steel of the tool every time the bath is used, the grain becoming finer after it is tempered than it was at first. This product was formerly known as Excelsior compound and is in use in the tunnel at Forty-second street and has been used at the Norfolk Navy Yard. Under the new name it is being put on the market on a large scale. The officers are George L. Campbell, president; J. H. Smith, vice-president and general manager; B. H. Drake, treasurer.

The American Smelting & Refining Company, Empire Building, New York City, will shortly erect a new furnace at their plant at East Helena, Mont., to handle the increased quantity of ore. It will have the same capacity as the present one, about 170 tons of charge per day. This, with the other four, will enable the company to put through about 850 tons of charge, or 625 tons of ore per day. The improvements at this plant which have been under way for the past year, most notable of which are the three great bag houses and the large horizontal steel flue, extending three-fourths of the way around the plant, through which the fumes will be conducted to the bag houses where the dust will be collected, are now nearly completed.

The Foster-Richardson Company, recently organized, have secured the plant formerly occupied by the American Bedstead Company at Westboro, Mass., and as soon as the necessary repairs can be made they will begin the manufacture of iron bedsteads. The officers are Chas. B. Foster, president; Geo. Richardson, vice-president, and Chas. J. Manning, secretary and treasurer.

J. V. Rose & Son are building a new plant at Sharon, Pa., for the manufacture of fire brick, which will have a capacity of 50,000 brick per day.

The Peckham Mfg. Company, Havemeyer Building, New York City, manufacturers of motor wheels and trucks, will enlarge their plant at Kingston, N. Y., by an addition to the forge department, 54 x 72 feet, and an addition to the stock room, 30 x 240 feet.

The Sterling Electrical Mfg. Company will build a plant at Warren, Ohio, for the making of electrical supplies. The officers of the company are as follows: W. A. Smith, president; C. G. Dennison, vice-president; Glen C. Webster, secretary; William Coale, treasurer, and Glen Webster, superintendent.

We are advised by G. A. Lambert, secretary and treasurer of the Buckeye Mfg. Company, Anderson, Ind., that they will erect a factory at Union City, Ind., for the manufacture of automobiles, and expect to turn out not less than five machines a week. They will build two-passenger rigs only at a moderate price. The motive power will be gasoline explosive engines. The capital stock of the company is \$50,000.

The Enterprise Boiler Company, Youngstown, Ohio, manufacturers of boilers and heavy plate iron work, have recently received an order from the Lackawanna Iron & Steel Company of Scranton, Pa., for 20 30-ton hot metal cars, for the new works at Buffalo. The Enterprise Boiler Company are also to furnish 30 20-ton cars for the Illinois Steel Company and six 20-ton cars for the Colorado Fuel & Iron Company, at Pueblo, Col. The large shops of the Enterprise Boiler Company are being operated to full capacity and the concern have a great deal of work on hand. The plant was established some years ago in a small way, but the capacity has been steadily increased from time to time and the present works are three or four times larger than the initial plant.

George W. Lord, 2238-2250 North Ninth street, Philadelphia, Pa., manufacturer of Lord's boiler compounds, has decided to establish several additional branches in Europe, all of which will be in charge of American managers and salesmen.

The Iron and Metal Trades.

Our monthly blast furnace statistics show that there has been a decline in the weekly capacity of the Coke and Anthracite furnaces from 306,991 tons on June 1 to 303,793 tons on July 1, while the stocks of Pig Iron in the hands of the merchant furnaces declined from 333,813 tons on June 1 to 327,761 tons on July 1. In other words, production and consumption nearly balanced. From all quarters comes confirmatory evidence that the consumption is phenomenal. Thus a leading official of the United States Steel Corporation reports that that concern are producing Steel Ingots at a rate which makes an output of 10,000,000 tons likely this year.

While statistically the situation is exceedingly sound, there is throughout an uncertainty and an ill defined feeling that we are on the top of the tide and that we may see slowly receding values. In some departments deliveries are becoming prompt, premiums have disappeared, and there is more disposition to hunt for business. In others, notably in the Wire trade, where the growing tonnage of the independent mills is beginning to tell, Wire Rods are being offered more freely on the basis of \$35, Pittsburgh, new sellers, small though they be, coming into the market. It is believed that a good deal of the Wire Nail capacity under construction will soon be available. In May it was estimated that out of the 30,000 kegs daily requirements, in the active season, 10,000 kegs could be covered by outside mills. The latter figure will be much enlarged before 60 days have passed.

The Steel Rail mills have opened their books for orders for delivery for the coming year at \$28 per ton, which is the price now prevailing. From the standpoint of the mills, the situation is very strong. In reality there are only four parties now, the United States Steel Corporation, the Pennsylvania-Cambria interest, the Colorado and Jones & Laughlins, Limited. The Lackawanna will not be in shape to resume at Buffalo until the early summer of 1902, and the starting of the Tennessee Company is too indefinite to allow them to become a factor for some time to come. As yet little business appears to have been booked, and probably the Southern roads, which can lay the year around, are likely to come in first. All the mills are crowded with work and will probably not be able to touch new business of importance before November or December delivery.

The feeling in the trade is that the differences between the Amalgamated Association and the union mills of the United States Steel Corporation will be very promptly settled, since both sides have much to gain from a continuance of work.

The lowering in the price of Sheets does not appear to have gone into general effect, and the majority of outside mills are adhering to the old prices.

Very little is being done for export. There is a report current that a sale of 25,000 tons of Ship Plates had been made for delivery at Belfast yards, but it is met with an authoritative denial. The private accounts of the situation in the German Iron trade continue very gloomy. Drastic measures may be necessary there to clear the atmosphere.

The London Tin King has given a little exhibition of his power over the spot market early this week. A sharp rise has been followed, however, by a rapid break.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	July 10, 1901.	July 3, 1901.	June 12, 1901.	July 12, 1900.
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PIG IRON:	\$14.75	\$15.00	\$15.00	\$16.75
Foundry Pig, No. 2, Standard, Philadelphia	12.75	13.00	13.50	17.00
Foundry Pig, No. 2, Southern, Cincinnati	15.00	15.90	15.00	18.50
Bessemer Pig, Pittsburgh	16.00	16.00	16.00	16.00
Gray Forge, Pittsburgh	13.50	13.75	14.00	16.50
Lake Superior Charcoal, Chicago	17.00	17.00	17.00	22.00

BILLETS, RAILS, ETC.:

Steel Billets, Pittsburgh (nom)....	24.00	24.00	24.50	20.00
Steel Billets, Philadelphia (nom)....	26.75	27.00	25.00	
Steel Billets, Chicago, (nom).....	.....	.....	.....
Wire Rods (delivered)	36.50	39.00	39.00	33.00
Steel Rails, Heavy, Eastern Mill..	28.00	28.00	28.00	35.00
Spikes, Tidewater	1.80	1.80	1.80	2.15
Splice Bars, Tidewater.....	1.50	1.45	1.45	2.00

OLD MATERIAL:

O. Steel Rails, Chicago, gross ton.	12.50	13.00	13.00	11.00
O. Steel Rails, Philadelphia .....	.....	14.50	15.75	18.00
O. Iron Rails, Chicago, gross ton..	18.50	18.50	18.50	14.00
O. Iron Rails, Philadelphia .....	.....	19.00	19.00	15.00
O. Car Wheels, Chicago, gross ton.	16.50	16.50	16.50	18.00
O. Car Wheels, Philadelphia .....	.....	17.50	17.50	19.00
Heavy Steel Scrap, Chicago, g. ton	12.50	13.00	13.00	10.00

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia...	1.55	1.55	1.55	1.45
Common Iron Bars, Chicago	1.40	1.55	1.55	1.45
Common Iron Bars, Youngstown	1.40	1.40	1.45	1.35
Steel Bars, Tidewater	1.60	1.60	1.62 ^{1/4}	1.45
Steel Bars, Pittsburgh	1.40	1.40	1.40	1.15
Tank Plates, Tidewater	1.75	1.75	1.75	1.45
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.15
Beams, Tidewater	1.75	1.75	1.75	2.05
Beams, Pittsburgh	1.60	1.60	1.60	1.90
Angles, Tidewater	1.75	1.75	1.75	1.95
Angles, Pittsburgh	1.60	1.60	1.60	1.80
Skelp, Grooved Iron, Pittsburgh..	1.82 ^{1/4}	1.82 ^{1/4}	1.80	1.25
Skelp, Sheared Iron, Pittsburgh ..	1.90	1.90	1.85	1.30
Sheets, No. 27, Pittsburgh	2.90	2.90	2.20	2.90
Barb Wire, f.o.b. Pittsburgh	2.90	2.90	2.90	2.90
Wire Nails, f.o.b. Pittsburgh	2.30	2.30	2.30	2.30
Cut Nails, Mill	2.00	2.00	2.00	1.95

METALS:

Copper, New York	17.00	17.00	17.00	16.25
Spelear, St. Louis .....	.....	3.88 ^{1/4}	3.80	4.10
Lead, New York	4.87 ^{1/4}	4.87 ^{1/4}	4.87 ^{1/4}	4.00
Lead, St. Louis .....	.....	4.25	4.20	3.95
Tin, New York	27.75	28.50	28.75	32.5
Antimony, Hallett, New York ..	8.75	8.75	8.75	9.62 ^{1/4}
Nickel, New York	60.00	60.00	60.00	56.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.19	4.19	4.19	4.84

Chicago.

1205 FISHER BUILDING, July 10, 1901.—(By Telegraph.)

The situation presents a variety of phases. Dullness manifests itself in some lines, notably in such raw materials as Pig Iron and Scrap, while in Plates, Sheets and Bars trade is remarkably active. The possibility of labor troubles in the foundries still overshadows Pig Iron. It is hoped, however, that an amicable settlement will be reached this week. The signing of the scale by the Republic Iron & Steel Company and local rolling mill companies gives much satisfaction to Bar Iron customers. The intensely hot weather of the past week, together with the holidays, had some effect in reducing the volume of business, but in a general way the situation has been quite encouraging to manufacturing interests. The outlook continues hopeful, and if the labor troubles are speedily settled it is believed that business conditions will be very satisfactory the remainder of the year.

Pig Iron.—A great deal of figuring is going on, but the actual volume of business has not been large. The heaviest sale reported was about 2000 tons of Southern Mottled. Negotiations are proceeding for 10,000 tons of Gray Forge. Many consumers of Foundry Iron will be obliged to purchase good quantities to cover their wants for the last half of the year, but while they are inquiring prices they are deterred from closing contracts by the danger of a molders' strike. As soon as this question is

settled the Pig Iron market is expected to be active. Some sales of Malleable Bessemer have been made, but the largest transaction of this kind was probably 500 tons. A good trade is being done in small lots of Charcoal Pig Iron, which is particularly in demand in the Northwest. The situation is strong among the local furnace companies. Their product has been cut down by the hot weather and their yards are still completely bare of stock. Southern furnace companies are adhering quite closely to recent quotations, although it is possible that our figures may be shaded 25c. per ton on Foundry grades. Southern High Silicon Irons have been in more plentiful supply than usual and prices on these have been rather irregular. We quote as follows:

Lake Superior Charcoal.....	\$17.00 to \$18.00
Local Coke Foundry, No. 1.....	15.50 to 16.00
Local Coke Foundry, No. 2.....	15.00 to 15.50
Local Coke Foundry, No. 3.....	14.50 to 15.00
Local Scotch, No. 1.....	15.75 to 16.25
Ohio Strong Softeners, No. 1.....	16.00 to 16.50
Southern Silvery, according to Silicon.....	14.90 to 15.15
Southern Coke, No. 1.....	14.65 to 14.90
Southern Coke, No. 2.....	14.15 to 14.40
Southern Coke, No. 3.....	13.65 to 13.90
Southern Coke, No. 1 Soft.....	14.65 to 14.90
Southern Coke, No. 2 Soft.....	14.15 to 14.40
Foundry Forge.....	13.15 to 13.40
Southern Gray Forge.....	12.65 to 12.90
Southern Mottled.....	12.15 to 12.40
Southern Charcoal Softeners, according to Silicon.....	15.00 to 16.50
Tennessee Silicon Pig.....	16.00 to 17.00
Alabama and Georgia Car Wheel.....	19.90 to 20.50
Malleable Bessemer.....	16.25 to 16.50
Standard Bessemer.....	17.50 to 18.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	16.50 to 17.00

Bars.—The wages scale having been agreed upon by the Republic Iron & Steel Company and the local independent companies, their various works are again running and thus many consumers are relieved. The market is quite active, with sales fully up to shipments, if not in excess of them. Some of the small mills are sold up to their capacity for 60 days or more. Mill shipments of Common Iron or Soft Steel Bars are quoted at 1.55c., Chicago. The Bar Iron prices can probably be shaded on desirable orders by some mills, but most sellers are adhering firmly to this quotation. Carload lots of Iron or Steel Bars are selling at 1.60c., and Hoops at 2c. Jobbers are having a continued heavy trade from stock and assortments are kept up with much difficulty, the statements being made that a great deal more business could be done if mills were making better shipments. Small lots from stock are quoted at 1.80c. to 1.90c. for Steel Bars, 1.90c. to 2c. for Bar Iron, and 2.20c. to 2.25c., base, for Hoops.

Car Material.—A great deal of buying is being done by both Car building companies and railroad companies for Car construction. Heavy specifications are being made on contracts, while new business is large.

Structural Material.—An addition to the Auditorium Hotel has been placed under contract which will require 1600 tons. The independent bridge companies are crowded with work and are purchasing material liberally. It is reported that promoters are at work on a scheme to consolidate these companies and form a corporation rivaling the American Bridge Company. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c.; 18 inches and over, 1.85c.; Angles, 1.75c. rates; Tees, 1.80c.; Universal Plates, 1.75c. to 1.85c.; small lots of Beams and Channels from local yards are quoted at 2.25c.; Angles, 2c. rates; Tees, 2.15c.

Plates.—A sale of 4000 tons is reported by the local mill. Agents for outside mills also report an excellent demand, which is running in excess of recent trade. The Plate mills now seem to be busier, as shipments cannot be promised so early as during June. Jobbers are enjoying a heavy demand from stock. They report trade never better than at present. Mill shipments are quoted as follows: Tank Plate, $\frac{1}{4}$ -inch and heavier, 1.75c. to 1.80c., Chicago; Flange, 1.85c.; Marine, 1.95c. Jobbers are selling small lots from store at 1.90c. to 2c. for Tank and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

Sheets.—The Sheet situation is peculiar. Notwithstanding the reduction in prices made by the leading Sheet company the market here is actually stronger. Large buyers assert that it is impossible for them to purchase Sheets at the reduction announced. The inde-

pendent mills are maintaining the old prices and will not accept business at the reduced figure. Jobbers are actually advancing prices from stock, instead of reducing them, because of the heavy drafts now being made on them. They claim that it would be unwise to reduce prices in view of the difficulty in replacing what they sell. No. 27 Black Sheets are firm at 3.40c. to 3.50c. from store, and Galvanized at 65 and 10 to 70 off. Some of the largest jobbers are selling Galvanized Sheets at 65 and 10 in carload lots.

Merchant Pipe.—Business has fallen off, as usual at this season, but is only lighter by comparison with previous months, the actual tonnage moving being quite large. Manufacturers' prices, random lengths, are as follows:

	In carloads.	Less than carloads.
Bik. Galvd.	Bik. Galvd.	
$\frac{1}{2}$ to $\frac{1}{2}$ inch and 11 to 12 inches.....	59.2	46.2
$\frac{3}{4}$ to 10 inches.....	68.7	53.3
1 to 2 $\frac{1}{2}$ inches.....	50	40
2 $\frac{1}{2}$ to 3 inches.....	57 $\frac{1}{2}$	47 $\frac{1}{2}$
6 inches and larger.....	50 and 5	47 $\frac{1}{2}$

Boiler Tubes.—Jobbers' stocks are being drawn upon by buyers in other sections who find it difficult to secure prompt shipments from the mills. Quotations on less than carloads from jobbers' stocks are as follows:

	Steel.	Iron.
1 to 2 $\frac{1}{2}$ inches.....	50	40
2 $\frac{1}{2}$ to 3 inches.....	57 $\frac{1}{2}$	47 $\frac{1}{2}$
6 inches and larger.....	50 and 5	47 $\frac{1}{2}$

Rails and Track Supplies.—More Light Rails are now being sold than Heavy Sections. The mills are too crowded with work on Heavy Rails to take on more business for this year, and from present appearances they will shortly be in a similar position with regard to Light Rails. Prices are firm at \$28 for Heavy Sections and \$33 and upward for Light Sections. Track Fastenings are in very good demand. Quotations are as follows: Splice Bars, 1.75c. to 1.80c.; Spikes, 1.95c. to 2c.; Track Bolts, with Hexagon Nuts, 2.80c. to 2.90c.; with Square Nuts, 2.65c. to 2.75c.

Merchant Steel.—Good sales of specialties are being made for quick shipment, while some contracts are also being entered for the season's requirements. The Shafting situation is a trifle irregular, but it is expected that manufacturers will arrange this week to correct it. Mill shipments, Chicago, are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.85c. to 2c.; Open Hearth Spring Steel, 2.30c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 off. Ordinary grades of Crucible Tool Steel are quoted at 6 $\frac{1}{2}$ c. for carloads and 7c. to 7 $\frac{1}{2}$ c. from store; Specials, 12c. upward.

Old Material.—Trade is confined to small lots. The rolling mill companies are buying very little at present, while foundries are not disposed to add to their stocks with the danger of a molders' strike pending. Dealers are looking for better prices to follow the starting up of the mills. The following are approximate quotations per gross ton:

Old Iron Rails.....	\$18.50 to \$18.75
Old Steel Rails, mixed lengths.....	12.50 to 13.00
Old Steel Rails, long lengths.....	15.00 to 15.50
Heavy Relaying Rails.....	21.00 to 22.00
Old Car Wheels.....	16.50 to 17.00
Heavy Melting Steel Scrap.....	12.50 to 13.00
Mixed Steel.....	10.50 to 11.00

The following quotations are per net ton:

Iron Fish Plates.....	\$16.00 to \$16.50
Iron Car Axles.....	18.50 to 19.00
Steel Car Axles.....	15.50 to 16.00
No. 1 Railroad Wrought.....	14.00 to 14.50
No. 2 Railroad Wrought.....	12.00 to 12.50
Shafting.....	15.50 to 16.00
No. 1 Dealers' Forge.....	12.00 to 12.50
No. 1 Busheling and Wrought Pipe.....	10.50 to 11.00
Iron Axe Turnings.....	9.50 to 10.00
Soft Steel Axe Turnings.....	9.00 to 9.50
Machine Shop Turnings.....	8.50 to 9.00
Cast Borings.....	4.25 to 4.50
Mixed Borings, &c.....	4.50 to 5.00
No. 1 Boilers, cut.....	11.50 to 12.00
No. 2 Boilers, cut.....	9.50 to 10.00
Heavy Cast Scrap.....	10.50 to 11.00
Stove Plate and Light Cast Scrap.....	8.00 to 8.50
Railroad Malleable.....	11.50 to 12.00
Agricultural Malleable.....	10.50 to 11.00

Metals.—Pig Lead is in much better demand, but is unchanged at 4.32 $\frac{1}{2}$ c. for Desilverized and 4.42 $\frac{1}{2}$ c. for Corroding in 50-ton lots. Copper is steady at 17 $\frac{1}{2}$ c. for carload lots of Lake, and 17 $\frac{1}{2}$ c. for Casting brands. Dealers quote selling prices on small lots of Old Materials as follows: Copper Wire and Heavy, 15 $\frac{1}{2}$ c.; Copper Bot-

toms, 14c.; Red Brass, 14½c.; Yellow Brass, 10½c.; Light Brass, 8½c.; Pipe Lead, 4½c.; Zinc, 3½c.

Coke.—The recent accumulation of Coke on local dealers' hands seems to have been worked off, and a better tone is observed, although the demand is not heavy enough among the foundries owing to the possibility of labor troubles. Prices are held at \$4.50 to \$5 for 72-hour Foundry Coke.

Philadelphia.

FORREST BUILDING, July 9, 1901.

The Iron and Steel trades have during the past week been exceedingly dull and inactive, which condition, however, is not unusual at this season of the year. The mid-year suspension of the manufacturing plants for repairs, stock taking, &c., together with the holidays and extreme heat, caused a general suspension of new business, and in many cases deferred work and deliveries of orders on hand. The general tone of the market during the past few days, however, is better, and with small stocks on hand in consumers' yards it is almost certain that a heavy buying movement will shortly set in. Some little uneasiness has been felt owing to the prospect of extensive labor difficulties, but it is now considered that an early settlement is probable. These matters, however, have not affected this market to any very great extent, except in the way of delaying deliveries. Small lots of Pig Iron have been taken, but nothing has been done in large tonnage. Inquiries, however, have been good, and there is no doubt that some large orders will be shortly given out, and that the bookings for the last half of the year will be very extensive. The demand for Plates and Structural Material still continues and mills are handling a record tonnage. Prices generally are firmer but unchanged, and in some lines it would be difficult to say just what quotations would be; this is particularly so in regard to Old Material. The statistical position in regard to Pig Iron will no doubt throw some light on this matter and will be of considerable interest to the trade.

Pig Iron.—The feeling in regard to Pig Iron is more confident, and prices for all grades are firmer. Inquiries have been more numerous and a number of small lots have been sold. Consumers do not appear to be quite ready to take hold on large lots, but with stocks at a low point it is quite probable that some large sales will be made during the next few weeks. Some good sized inquiries are already in the market and others are said to be practically closed. The range of prices for Philadelphia and nearby places may be given as follows: No. 1 X Foundry, \$16 to \$16.25; No. 2 X Foundry, \$15 to \$15.50; No. 2 Plain, \$14.50 to \$14.75; Standard Gray Forge, \$14 to \$14.25; Ordinary Gray Forge, \$13.50 to \$13.75; Basic (Chilled), \$14 to \$14.25.

Billets.—The market continues quiet, although firm. Buying has improved slightly, but sales are mostly in small lots. For early shipments \$26.75 is quoted, but lower figures it is said can be done for delivery during the last quarter of the year.

Plates.—The active demand for Plates continues. Orders for lots up to 500 tons are being taken; some for delivery during the last quarter of the year, while specifications for larger tonnages are in the market. The mills are all busy and the tonnage increasing. Prices are as follows for city and nearby deliveries: Plates, ¼ inch and thicker, 1.75c. to 1.80c.; Universals, 1.75c. to 1.80c.; Flange, 1.90c. to 2.10c.

Structural Material.—Conditions are practically unchanged. There is a large amount of business, but deliveries are still more or less delayed. Prices remain unchanged as follows for seaboard or nearby deliveries: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

Bars.—The demand continues fairly active with no change in prices. A number of mills have resumed operations after the usual midsummer stoppage for repairs, &c., and no material delay is apparent in general deliveries. Quotations for seaboard and nearby deliveries are as follows: Iron Bars, 1.55c. to 1.60c.; Steel Bars, 1.60c. to 1.65c.

Sheets.—There appears to be no difficulty in doing business at former prices, at which figures orders are being readily taken for reasonable deliveries. The mills are all exceedingly busy and maintain the following quotations, which are as near to the market as can be given for best Sheets (Common Sheets two-tenths less): No. 10, 2.50c.; No. 14, 2.70c.; No. 16, 2.90c.; Nos. 18-20, 3.40c.; Nos. 21-24, 3.50c.; Nos. 26, 27, 3.65c.; No. 28, 3.75c. to 3.80c.

Old Material.—Owing to the more or less general shut down of mills during the past week there has been little demand for the various grades of Scrap Iron. It is practically impossible under such circumstances to give any definite prices. With the resumption of work at the mills the market for this material is expected to be more active, with little or no change in prices.

Cleveland.

CLEVELAND, OHIO, July 9, 1901.

Pig Iron.—While sales of the Foundry grades are comparatively light just now, the consumers buying in a hand to mouth fashion, the indications are all for much better times ahead. The present ordering is far ahead of the contracts, and in many instances the furnaces have not been able to keep up with the demand. Furnace labor has been very hard to obtain in the last two weeks, due to the excessively hot weather, and production has been curtailed to a considerable extent. The inability to get workmen also prevented that Iron which had been collected from being forwarded to the buyers. The result of this was that some of the mills had to curtail their operations also because of the short supply of Iron. It looks very much now as if buying for the third quarter was about to start up briskly, and the outlook for the entire second half of the year is very promising. The only gloomy prospect is in prices to be obtained. Foundry grades are quoted a little lower this week than they have been for the last few weeks, and it looks as if the business for the third quarter would be contracted for on even a lower basis, which, however, is to be determined in the next ten days. Foundry No. 1 is now quoted at \$14.25 and Foundry No. 2 at \$13.75, Valley furnace. Basic is in fair demand, with the supply for immediate delivery limited. The quotation remains firm at \$14.75 to \$15, according to the urgency of the need of the purchaser. Some furnaces have sold all of their material for the third quarter and are not seeking orders. Many of the furnaces in the Bessemer Association are sold up now until October 1, and about all of the stacks contained in that organization are filled up to September 1. The sales made recently and those now being reported where immediate delivery is desired are on the basis of \$15.25 at the Valley furnace, and transactions are heavy.

Finished Material.—The week in Finished Material has been quieter than those which immediately preceded. This obtains by comparison only, for the sales were fairly heavy, although not up to the standard recently established. Yesterday the mills of the Republic Iron & Steel Company opened after having been closed for only a week for repairs and invoice. The shut down was curtailed because of the great demand for Bars. The inquiries also denote a heavier business in sight. Orders for Round Bars have amounted to 5000 tons this week. The price holds firm at 1.40c., Pittsburgh, for Bessemer, and 1.50c., Pittsburgh, for Open Hearth. Plates have not been quite as active as some have expected, and the mills have plenty of capacity yet uncovered. The big ordering of new ships has created a demand for Ship Plate, but this is not capable of keeping all of the mills busy. The talk of lower prices has been revived in limited circles, but without any indication that it will amount to anything more than talk. The quotation is still 1.70c. Beams and Channels are very scarce and Structural Material seems to be the one grade which has escaped the midsummer dullness. The mills are far behind on their orders, and no relief is now in sight, for the buyers have been specifying ahead of their contracts and have been urging the mills to ship

the material as fast as possible. The price holds firm and the market is very strong. The quotation is still 1.70c. This week has seen an inquiry for about 850 tons of Billets from the Union Rolling Mill. The sale has not been made and considerable interest is taken in the order on account of the uncertainty of the price to be obtained. The Rail Trade is quiet with but little being done and with prices holding at \$28.

Old Material.—The market is livening up some, but sales have not struck the pace which is satisfactory to the dealers. Some inquiries have been made during the week which indicate that the buyers are beginning to look around, but no big orders have been placed requiring future delivery. All sales have been of small amounts and for instant shipment. Other than these the only orders placed have been on former contracts. The quotations are haphazard in nature, as it is almost impossible to settle upon figures which would represent the market.

Pittsburgh.

HAMILTON BUILDING, July 10, 1901.—(By Telegraph.)

Pig Iron.—The United States Steel Corporation and the Cambria Steel Company have bought Bessemer Iron in the past week for July and August shipment, but beyond this there has been very little done. The price of Standard Bessemer Iron in good sized lots for July and August shipment is \$15.25, at Valley furnace. As noted before, a few small lots of Bessemer Iron, possibly 1500 to 2000 tons altogether, are being offered at \$15, Valley furnace, or \$15.75, Pittsburgh. There is very little doing in Gray Forge Iron, and prices are weak. Foundry Iron is also quiet, and No. 2 has sold as low as \$14, Pittsburgh. We quote: Standard Bessemer Iron in large lots \$15.25, Valley furnace, or \$16, Pittsburgh. Northern Gray Forge, \$13 to \$13.25, Valley, or \$13.75 to \$14, Pittsburgh. Prices on Foundry Iron are lower, and we quote No. 1 Foundry at \$14.50 to \$15; No. 2, \$14 to \$14.50; No. 3, \$13.75 to \$14, all f.o.b. Pittsburgh.

Muck Bar.—There is a great scarcity of Muck Bar for prompt shipment, and standard makes have sold at \$30.50 to \$31, Pittsburgh.

Billets.—There is very little doing in Steel, and small lots of Billets for July and August shipment may be quoted at \$24 to \$24.50, Pittsburgh. Basic Billets, ordinary carbons, are quoted at about \$25 to \$25.50, Pittsburgh.

(By Mail.)

Unless all signs fail, the strike which has tied up the union Sheet mills of the American Sheet Steel Company and the puddling and finishing mills of the American Steel Hoop Company will be settled at a conference to be held in this city on Thursday, July 11. President Shaffer of the Amalgamated Association has sent out a telegraphic call to the principal officials of his organization to come to Pittsburgh at once, to attend this conference. There is no doubt but that both sides are anxious for a settlement of the trouble, which might eventually, if allowed to go on, tie up many of the mills operated by the constituent interests of the United States Steel Corporation. There is no doubt but that the Amalgamated Association has chosen a very opportune time to enforce its demand for recognition of the scale in nonunion mills. There is plenty of tonnage, prices are very profitable, and it is vastly to the interest of the United States Steel Corporation to keep their mills steadily employed. Pressure from high officials of the United States Steel Corporation, and also from the banking interests represented by J. P. Morgan & Co., has been brought to bear upon the officials of the constituent companies, and in view of this it is very safe to assume that the strike will be settled before this week is out. According to officials of the Amalgamated Association, it will be insisted upon that the scale be signed for nonunion mills, and if that organization succeeds in having this done it will result in a large accession to its ranks. Lodges have been organized among employees in nearly all of the nonunion works, but as to how large the membership is in these lodges is not

known. The bright prospects of a settlement of the strike are pleasing to the trade generally. The situation in the local Iron trade has been without special feature since our last report. In spite of the fact that we are in the midst of the midsummer dullness, the tonnage of material being placed with the mills is fairly large, and with old contracts insures steady operation for some time to come. All the plants of large interests, like Carnegie Steel Company, National Steel Company, American Steel & Wire Company and others, are being operated to utmost capacity. The tonnage being turned out in Pig Iron, Steel and Finished Material was never as large as at the present time, yet in spite of this stocks all over the country are steadily decreasing. The Pig Iron being made by the furnaces is being used up as fast as produced, while Steel is about as scarce as it has been at any time in the last three or four months. In two or three lines of Finished Material, such as Bars and Plates, demand has been somewhat light, but prices are strong. With labor troubles out of the way, there seems to be no doubt that present satisfactory conditions in Iron and Steel will last for the rest of this year at least.

Ferromanganese.—The market is very dull, all the large consumers being covered ahead by contracts. We continue to quote foreign Ferro at \$53.50 and domestic at \$55, delivered, f.o.b. cars, buyer's works.

Structural Material.—The underground, surface and elevated roads that are to be built from the downtown part of Pittsburgh to the east end will require an enormous tonnage in Steel, probably exceeding 100,000 tons. The engineer in charge of this work is Emil Swenson, who was formerly with the Keystone Bridge Works, and he states that work will be commenced late in the winter or in the early spring. The contemplated cost of the roads chartered is \$10,000,000, and every pound of material needed can be supplied by Pittsburgh. This tonnage will be a factor in the situation after the first of the year. The material for the Mercantile Trust Building in this city, about 1000 tons, has been given to a local mill. In spite of the lateness of the season, a good deal of tonnage is being placed and several large jobs are in sight. A new court house is assured at Greensburg, and this will require from 2500 to 3000 tons. The two local Structural mills have enough tonnage on their books to keep them running to full capacity for months ahead. Prices are firm, and we quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.40c. to 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh.

Plates.—Report has it that the Carnegie Steel Company have taken a contract for about 25,000 tons of Plates for one of the shipyards at Belfast, Ireland. This, however, is not confirmed. The mills report that a larger tonnage is being placed. A few of the smaller Plate mills are scarce of work, but so far there has been no cutting in prices. We quote: Tank quality, $\frac{1}{4}$ -inch and heavier, 1.60c.; 3-16-inch, 1.70c.; under 3-16-inch and above No. 10, 1.75c.; Flange or Boiler Steel, 0.1c. advance over the base of Tank; Marine and Fire Box, American Boiler Manufacturers' Association specifications, 0.2c. advance over Tank; Still Bottom Steel, 0.3c. advance over Tank; Locomotive Fire Box Steel and equivalent specifications, 0.5c. advance over Tank, all f.o.b. Pittsburgh.

Muck Bar.—The scarcity of Muck Bar, referred to in this report before, has been increased by the shut down of a number of mills that ordinarily are sellers in the open market. Prices have been advanced very fast, and sales of standard grades of Muck Bar are reported at \$30 to \$30.50, f.o.b. cars, Pittsburgh. One transaction involving about 5000 tons was made on a conversion basis.

Sheets.—The trade are still discussing the recent reduction in price of Black and Galvanized Sheets, made by the American Sheet Steel Company. Deliveries of both Black and Galvanized Sheets inside of two to three

months are almost impossible to get, and some mills are sold up for third quarter and have a good deal of tonnage booked for last three months. Minimum prices of Black Sheets, box annealed, one pass through cold rolls, in lots of 500 bundles and over, are as follows: Gauges 10 and 12, 2.30c.; 13 and 14, 2.40c.; 15, 16 and 17, 2.50c.; 18 to 21, 2.60c.; 22 to 24, 2.70c.; 25 and 26, 2.80c.; 27, 2.90c.; 28, 3c.; 29, 3.15c.; 30, 3.25c. The minimum price of Galvanized Sheets, in lots of 500 bundles and over, is 70, 10 and 5 per cent., f.o.b. cars, maker's mill. Jobbers quote in carloads for No. 27, 3c. to 3.05c.; No. 28, 3.05c. to 3.10c.; on Galvanized Sheets jobbers quote 70 and 10 off, while in small lots 70 and 5 is quoted. It should be noted that the lower prices quoted above are allowed only on orders involving 500 bundles and over.

Rails.—Only an occasional small lot is being placed. The mills are not able to take on any large tonnage, being filled up for the balance of the year. We quote at \$28, at mill.

Merchant Steel.—The market is somewhat quiet, and on desirable orders concessions in prices are being made. We quote: Tire Steel, 1.60c. to 1.70c.; Toe Calk, 1.85c. to 2c.; Open Hearth Spring, 2c. to 2.10c.; Plow Slabs, 2c. to 2.10c.; Cold Rolled Shafting, 55 per cent. off in carloads, 50 per cent. in less than carloads; Sleigh Shoe Steel, 1.65c. to 1.75c.; Tool Steel, 6c. per lb. and upward, according to the quality. On Tool Steel the mills allow freight east of the Mississippi River.

Skelp.—The market is very firm and there is a large demand. One concern are reported to be inquiring for 5000 tons of Skelp, for delivery over last six months. We quote Grooved Steel Skelp at 1.75c. to 1.80c.; Grooved Iron Skelp is 1.82½c. to 1.85c., and Sheared, 1.90c. to 2c., depending on order and sizes.

Pipes and Tubes.—Demand for Tubular goods continues heavy, and prices are very firm. To consumers in carload lots prices are as follows:

<i>Merchant Pipe.</i>		Per cent. Black.	Per cent. Galvd.
½ to 1½ inch and 11 to 12 inch.....		61	48
¾ to 10 inch.....		68½	56
<i>Casing, Random Lengths.</i>			
2 to 3 inch.....	S. & S.	I. J.	
3½ to 4 inch.....	58	53½	
4½ to 12½ inch.....	63	59	
4½ to 12½ inch.....	65	61½	
<i>Casing, Cut Lengths.</i>			
2 to 3 inch.....	S. & S.	I. J.	
3½ to 4 inch.....	53½	59	
4½ to 12½ inch.....	61½	57½	
<i>Boiler Tubes.</i>			
Steel.	Up to 22 feet. Per cent.		
1 inch to 1½ inch and 2½ inch to 5 inch, inclusive....	65½		
2 inch to 2½ inch, inclusive.....	60		
6 inch and larger.....	59		
<i>Iron.</i>			
1 inch to 1½ inch and 2½ inch.....	43½		
1½ inch to 2½ inch.....	43		
2½ inch to 13 inch.....	53		

Prices made by the mills to the jobbers are from 5 to 10 per cent. or more lower than the above, depending on the order. It should be noted that the above prices are for small lots.

Coke.—Output of Coke in the Connellsville region continues heavy, amounting last week to 230,000 tons. We quote strictly Connellsville Furnace Coke at \$1.75 to \$2 a ton. Main Line Furnace Coke is being offered at \$1.60 to \$1.75 a ton, and in some cases prompt Coke is offered at lower prices. Strictly Connellsville 72-hour Foundry Coke is quoted at \$2.25 to \$2.50 a ton and Main Line Foundry from \$2 to \$2.15 a ton to consumers.

Cincinnati.

FIFTH AND MAIN STS., July 10, 1901.—(By Telegraph.)

In Pig Iron circles the situation is still quite dull, though it looks as if the past week was hardly so quiet as it has been through the few weeks preceding. There has been some Forge, Pipe and Foundry Iron selling round through the Central West in lots up to 2000 tons. The run of small orders has also been better. Prices so far as Southern Iron goes are simply wretched from the standpoint of many furnaces. While there have been no cuts made, so far as reported, on the minimum figures given here on lower grades, yet it is undoubtedly

true that No. 2 Southern has been sold down to \$10, Birmingham. There is a strong feeling that these figures are entirely too low for justification under the present circumstances, and hence a number of interests are practically out of the market until the tide is again turned. There is much talk in effect that the decline in prices of the past two months was a senseless proceeding. Consequently a stronger feeling is developing, and it is believed the bottom of the fall has about been reached. Northern Irons are relatively much stronger than Southern, and but little disposition is shown to shade figures to meet Southern competition. The outlook, on the whole, is for a quiet week, with an increase of inquiry. Freight rate from Birmingham is \$2.75 to this point; from Hanging Rock district, \$1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$13.50 to \$13.75
Southern Coke, No. 2.....	13.00 to 13.25
Southern Coke, No. 3.....	12.25 to 12.75
Southern Coke, No. 4.....	11.75 to 12.00
Southern Coke, No. 1 Soft.....	13.50 to 13.75
Southern Coke, No. 2 Soft.....	13.00 to 13.25
Southern Coke, Gray Forge.....	11.75 to 12.00
Southern Coke, Mottled.....	11.75 to 12.00
Ohio Silvery, No. 1.....	15.50 to 16.00
Ohio Silvery, No. 2.....	14.50 to 15.00
Lake Superior Coke, No. 1.....	14.50 to 15.00
Lake Superior Coke, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 3.....	13.50 to 14.00
Southern Basic.....	13.75 to 14.00

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades.....	\$18.25 to \$18.75
Standard Southern Car Wheel, No. 2.....	17.25 to 17.75
Lake Superior Car Wheel and Malleable.....	18.50 to 19.00

Plates and Bars.—The market is rather dull just now, with no apparent change in prices. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.60c., with half extras; same in small lots, 1.80c., with full extras; Steel Bars, in carload lots, 1.55c., with half extras; Base Angles, in carload lots, 1.80c.; Plates, ¼-inch and heavier, 1.80c.; Sheets, No. 16, 2.50c.

Old Material.—No change reported in trade or prices. We quote dealers' buying prices, f.o.b. Cincinnati, as follows: No. 1 Wrought Railroad Scrap, per net ton, \$13.25 to \$13.50; Cast Railroad Machine Scrap, \$12.25 to \$12.75; Iron Axles, \$18.75 to \$19; Iron Rails, \$16.75 to \$17.25; Steel Rails, rolling mill lengths, \$14.75 to \$15.25; short lengths, \$13.75 to \$14; Car Wheels, \$15.75 to \$16.25. All prices except No. 1 Wrought on the basis of gross tons.

The Belgian Iron Market.

BRUSSELS, June 23, 1901.—During the months of May and June the situation has been slightly worse than it was in April. The questions bearing on Pig Iron have not yet found a solution, and none of the blast furnaces except La Louviere has blown in. Stocks decline very slowly, but once the yards of the blast furnaces have been cleared it is believed that the future may be faced with some confidence. The question as to Coke is the most difficult to solve, because the syndicate, although animated by good intentions, claims to be unable to place the price of Furnace Coke below 17 francs, which is still too high. At a price of 15 francs contracts over somewhat extended delivery might be arranged for, but even at 16 francs it is impossible to negotiate. Below are imports and exports of Pig Iron during the first five months of the year compared with the like period in 1900:

<i>Imports.</i>		First five months, 1901.	First five months, 1900.
		Tons.	Tons.
Pig Iron.....		70,970	170,247
Castings		3,592	1,484
Totals		74,562	171,731
<i>Exports.</i>			
Pig Iron.....		5,587	3,534
Castings		11,460	11,364
Totals		17,047	14,898

It will be observed that the imports diminished considerably in 1901, falling off 97,169 tons, while the exports increased only by 2149 tons.

So far as finished products are concerned the situation is far from being satisfactory. German competition, severer from day to day, baffles all the efforts of our

Ironmasters to sustain the struggle. The Steel works are completely out of orders.

Finished Iron and Steel, as well as Blooms and Billets, have undergone little change, but the transactions are insignificant. The demand for Merchant Bars is slightly better, and orders are coming in fairly well. Bars are sold at 14.25 francs for No. 2 and 14.75 francs for No. 3 for the home market, and at £5 12s. for No. 2 and £5 16s. for No. 3 for export. Blooms are quoted 10 to 10.50 francs per 100 kg. for export and 11 francs for the home market, while Billets are 10.75 for export and 11.50 to 12 francs for the home market.

There has been no improvement in Beams, which fetch £4 16s. f.o.b. Antwerp, and 13.50 francs per 100 kg. for the home market.

Merchant Steel is selling fairly well at £5 6s. f.o.b. Antwerp for export and 14 to 14.50 francs for the home market.

The orders which supplied the plate mills fairly with work about a month ago have vanished altogether. Prices have declined very much, and it is hoped that a recovery may take place because the plate mills are all losing money.

The following are the results of our imports of intermediate products and our exports of finished products during the first five months of the years 1900 and 1901:

Imports of Intermediate Products.

	First five months, 1901.	First five months, 1900.
	Tons.	Tons.
Steel Blooms and Billets.....	22,451	4,109
Old Material.....	27,054	7,064
Totals.....	25,205	4,873
<i>Exports.</i>		
Billets and Blooms.....	89	601
Old Material.....	283	142
Totals.....	372	743

For Finished Iron and Steel the figures are as follows:

Exports of Finished Products

	First five months, 1901.	First five months, 1900.
	Tons.	Tons.
Iron and Steel Wire.....	1,562	2,484
Beams.....	9,677	41,592
Rails.....	41,821	21,314
Plates and Sheets.....	24,692	36,254
Shapes.....	70,291	95,138
Nails.....	3,584	3,898
Forgings.....	26,746	30,129
Galvanized Iron.....	1,352	1,163
Tin Plate.....	164	364
Totals.....	179,889	232,336

These figures are not brilliant, so far as our industry is concerned. They show in fact that our exports of finished products during the first five months of 1901 have fallen off by 52,447 tons. Imports are exhibited in the following table:

Imports of Finished Iron and Steel.

	First five months, 1901.	First five months, 1900.
	Tons.	Tons.
Iron and Steel Wire.....	8,300	8,324
Beams.....	3,950	580
Rails.....	661	389
Plates and Sheets.....	4,164	6,655
Shapes.....	8,098	11,060
Nails.....	272	313
Forgings.....	6,087	3,369
Galvanized Iron.....	39	126
Tin Plate.....	1,643	1,697
Totals.....	33,244	32,514

The unfortunate condition of our metallurgical industry arises above all from the high prices of fuel, which makes it impossible for the ironmasters to produce at a sufficiently low price to compete with their rivals, who obtain coal at lower rates. May has brought quite a number of orders to the Liège district, which is therefore favored as compared with Charleroi. The Cockerill Company have taken an order for 10,000 tons of Rails for the Beyrouth Railroad to Mecca at 134 francs per ton, c.i.f. Beyrouth. The Ougree & Marihaye Company have taken the order for the Fish Plates, 1400 tons, at about 169 francs per ton f.o.b. Antwerp, and finally the Track

Bolts have been awarded to the Croyere Company at 225 francs per ton f.o.b. Antwerp.

Our relations with the United States are still very much restricted; imports, generally speaking, are very small, having amounted during the first five months of the current year to only 1857 tons. Similarly there has been a falling off in old material and in rolled products. However, we are now receiving, unfortunately for us, a good deal from foreign countries, particularly from Germany, not alone so far as raw materials are concerned, but also as to finished products. We are therefore quite unable to understand why the United States do not endeavor to furnish their share. The belief is here also that we ought to obtain coal from your country. Many rolling mills, exasperated at the low quality of the fuel of the Belgian collieries, do not want to buy coal from their own country, and would even prefer to pay more to foreign producers; but in order to practically develop the commerce with Belgium it would be necessary that the American coal producers had at Antwerp docks, stock piles and screening arrangements. If they were to take the initiative in building installations of this kind so as to secure a regular and permanent service our manufacturers and capitalists would be disposed to associate themselves with them and would invest several millions of francs in any company organized with this end in view.

The German Iron Market.

ESSEN, June 10, 1901.—Since the last report the employment of the mills has somewhat improved, since there is a better home demand, and since liberal export orders have been received. In sharp contrast to the English trade, where the year 1901 has shown a marked decline in exports of Iron and a notable increase in the percentage of imports, the foreign trade of the German Iron Industry has proved quite favorable. During the months of January to April, both inclusive, the imports of Iron, Steel and machinery were 297,842 tons in 1900 and 148,300 tons in 1901. The exports, on the other hand, during the same time rose from 480,779 tons in 1900 to 617,794 tons in 1901.

Prices both for the home market and for export still leave a good deal to be desired, and in some instances involve direct losses. There is nothing special to report in Iron Ore, since contracts cover a long period to come. Some of the mines have reduced production because the blast furnaces are not in a position to work up now the quantities contracted for. Nor is much improvement to be observed in Pig Iron. Stocks keep on increasing and have reached a considerable magnitude. There has been some increase in the inquiry for Steel, but business is only closed occasionally. Prices for Pig Iron and for Steel are purely nominal.

Since our last report there has been increased activity in Bars, Hoops, and particularly in Plates, Sheets and Wire. The demand for Bar Iron is limited entirely to special grades. Steel Bars are in active demand for export, and considerable quantities have been booked. These involve losses, however, for those works which do not possess their own blast furnaces and their own collieries. Steel Bars and Light Shapes are quoted 115 to 120 marks, the latter for Open Hearth quality. For Common Iron the quotation is 122 to 125 marks, and for better grades of Iron 130 to 135 marks. Generally speaking, it is a fact that the quantity of Bars in second hands offered at cut rates is decreasing. The period appears to be approaching when the market will be again guided by normal supply and demand. Hoops and Bands are active, and the works are well employed, although it must be noted that it is chiefly for export, which is taken at correspondingly low prices. For the home market prices are a little better at 125 to 127½ marks. Still many works who still have contracts for dear Steel are hardly covering costs. The demand has somewhat increased in Skelp, but is still below the normal volume. Steel Boiler Tube Skelp is quoted 125 to 130 marks. Iron Skelp for gas tubing, 135 to 140 marks, and Iron Boiler Tubing Skelp, 150 to 160 marks. The Pipe trade remains in a very unfavorable condition. The struggle between

the syndicate and the Mannesmann Company continues and the issue is still in doubt. The result is that prices are downright miserable. The volume of business, both in Gas Tubing and in Boiler Tubes, is relatively fair. Precautions are taken against speculative purchases on the part of dealers at present low prices.

The demand for Plates, which was fairly good, has rather declined. Still the condition of affairs is not unfavorable, and the works are quite well employed. New orders have been received from the ship yards, and the letting of 305 locomotives by the Prussian roads is expected to bring additional work to the Plate mills. The current quotation is 180 marks for prime Open Hearth Plates, while Tank Plates are quoted at 140 marks. The Sheet market is more active than it has been for a year. A lively demand and prompt specifications is characteristic of the situation. Prices are 130 marks per ton, and are, therefore, still below those of Plates.

As a result of the revival in building deliveries in Beams are heavier, but still they are behind those of the previous year. The price on small quantities has been raised 2.50 marks per ton. The Wire business has further developed favorably. Ample orders have come in both for Wire Rods and for Drawn and Galvanized Wire and Woven Wire products. The works are particularly busy at the present time for South America, in view of the pending changes in rates of freight. For the home market ordinary Steel Rods are quoted 135 marks, Drawn Wire 145 to 150 marks, and Wire Nails 200 to 205 marks, base.

There has been a further improvement in the market for Cast Iron Pipe, and it appears that business promises to be very active in the larger sizes. The Pipe shops have therefore raised the price 5 marks per ton above the low prices hitherto ruling.

Metal Market.

NEW YORK, July 10, 1901.

Pig Tin.—Business during the week under review was interfered with by the closing of the New York Metal Exchange from July 4 to 8. When the market here opened on Monday cables from London showed a heavy advance on spot Tin. This advance was followed up on Tuesday, when the rise culminated in the price of £140 for spot Tin. To-day a break of £12 occurred. During the whole time transactions in London were of very small character. Three months' Tin fluctuated at a discount of from £19 10s. to £12 15s. To-day's London closing was £128 for spot and £115 5s. for futures. It is reported that the stock of Tin in London is concentrated in one hand, thus giving them power to manipulate the spot price, while the three months' price actually represents the market value at which Tin can be imported from the Straits. The movement in London had the effect of unsettling business here to some extent. While on Monday forenoon dealers were unwilling to quote on country inquiries, quotations on the exchange dropped to 27½c., sellers, for spot. Tuesday the market advanced to 28.20c. and closed weak to-day at 27.25c., 27.75c. for spot and July; 26½c. to 27c. for August; 26½c., sellers, for September, and 26c., sellers, for October. Business here was of small proportions, consumers not being inclined to buy beyond the limit of their actual needs.

Copper.—The market here was quiet to the point of flatness and prices were nominal at former quotations—viz., 17c. for Lake and 16½c. for Electrolytic and Casting Copper. It was rumored, however, that Electrolytic had been sold at a slight concession from the above figure. The London market declined, and yesterday reached the lowest point since March, 1899, at £66 15s. The metal closed a little firmer to-day, spot being quoted at £67 and futures at £67 8s. 9d. Best Selected declined 10 shillings to £73 10s.

Lead.—No change has taken place in this market. Demand is of moderate proportions and prices are held steadily at 4.37½c. for Desilverized, New York. The London market has gone off a shade, closing to-day at £12 5s.

Spelter.—This metal is very dull, and prices are without change at 3.90c. to 3.95c. for spot to September. The

London market was easy at £16 12s. 6d. The St. Louis market ruled quiet at 3.80c.

Antimony.—Business was of ordinary volume, and prices remained steady at 8¾c. for Hallett's and 10¼c. for Cookson's.

Nickel.—Is firm and without change at a basis of 60c. for lots not covered by yearly contract.

Quicksilver.—Is unchanged, prices being quoted at \$51 per flask of 76½ pounds for lots of 50 flasks and more. London quotations are without a change, the market being £9 2s. 6d.

Tin Plate.—There is nothing new to be noted in this connection. Deliveries are being made on a liberal scale, and new business is of fairly large proportions. The signing of the Tin Plate wage scales for the year ending June 30, 1902, has removed the risk of a prolonged shut down of the mills this summer. The American Tin Plate Company are quoting on the basis of \$4.19 per box of Standard 100-lb. Cokes, f.o.b. New York, and \$4 per box, f.o.b. mill, for deliveries until October 1. The Welsh market has gone off 1½ pence, to 13 shillings 7½ pence.

The New York Machinery Market.

NEW YORK, July 10, 1901.

The machinery market continues to be decidedly dull. As stated last week, no contracts of any magnitude are in sight and work is going along in a desultory fashion, a sort of hand to mouth business. Of course, at this time of the year the dull trade is expected, and what is unusual in probabilities almost invariably occurs.

The contract for 240 milling machines called for by the Government for Rock Island, of which we made mention some time since, has not as yet been awarded. There were some irregularities in the bids which have had the effect of withholding the award. Just exactly what the officials will do in the matter remains to be seen. The three lowest bidders were all within the appropriation. Whether the contract will be awarded to these or new bids called for is a question. Government contracts are drawn with the reservation that any bid may be accepted, provided, of course, it complies accurately with the stipulations as laid down in the specification. In other words, the privilege is reserved of rejecting all bids or of accepting any individual bid.

The Bryan Vacuum Molding Machine Company of Lockport, N. Y., have appointed as their Eastern representatives the Power Specialty Company of 126 Liberty street, New York. This machine is designed upon an entirely new principle. The mold is lifted by a conveniently arranged vacuum cup which engages with its upper surface. The grip is perfect, and the speed of lifting can be regulated to a nicety. The machine is essentially a pattern drawing machine and has the particular advantage of being capable of using the ordinary wood patterns and does not require the expensive metal patterns which as a rule are needed with other types of molding machines.

The American Tie Plate & Rail Brace Company have opened offices at 220 Broadway. They are putting on the market a tie plate and rail brace combined which it is claimed will insure safety so far as the spreading of the rails is concerned. The device consists of a plate of sheet steel formed with ribs parallel with the tie upon its under surface. The two side edges of the brace are turned up at right angles so as to form an abutment, against which the outer web of the rail rests. Openings are made through the plate for the rail spikes. This construction provides a brace of great strength which supports the rail against any tendency toward spreading upon curves. It is further claimed that with this brace one tie in every five can be dispensed with and even with this reduction an added security can be provided against distortion of the rail. The company are manufacturing these tie plates for sale direct to railroads and expect within the next 60 days to have a plant fully equipped for their rapid production. The plates are sold outright or are sold with the saving of material required in track construction as payment.

The Bureau of Yards and Docks, Navy Department, Washington, will receive on July 27 proposals for boiler and steel chimney for the naval station at San Juan, P. R. The boiler is of 100 horse-power.

New York.

NEW YORK, July 9, 1901.

Pig Iron.—The only purchases of any consequence made during the week were those of the Eastern Malleable interests, who took about 5000 tons of Coke Iron. Local founders are buying from hand to mouth, some of them at very frequent intervals. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, \$16 to \$17.50; No. 2 X, \$14.75 to \$15.75; No. 2 Plain, \$14 to \$14.50; Gray Forge, \$14 to \$14.50; Tennessee and Alabama brands, No. 1 Foundry, \$14.75 to \$15; No. 2 Foundry, \$14 to \$14.50; No. 1 Soft, \$14.50 to \$15; No. 2 Soft, \$14 to \$14.50; No. 3 Foundry, \$13.25 to \$13.50; No. 4 Foundry, \$12.75 to \$13.25; Gray Forge, \$12.75 to \$13.

Cast Iron Pipe.—The rush of small orders continues and some of the shops are forced to decline work because they are unable to make deliveries. We quote \$25 to \$25.50 per gross ton, tidewater, for 8-inch Pipe. The Radford shops have been leased for five years from the Virginia Coal, Coke & Iron Company by M. J. Drummond & Co. of this city.

Steel Rails.—The mills have decided to name \$28 at mill for Standard Sections, for delivery in 1902. We quote \$28 for Standard Sections, \$33 to \$33.50 for Girder Rails, and \$22 to \$23 for Relayers. We quote Spikes, 1.80c. to 1.85c.; Splice Bars, 1.50c. to 1.60c.; Hexagon Track Bolts, 2.65c. to 2.70c. at mill.

Finished Iron and Steel.—A very good run of small orders continues. Among the contracts taken is one lot of about 1500 tons for buildings for the Correspondence Schools at Scranton, Pa. We quote as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.80c.; Angles, 1.75c. to 1.80c.; Tees, 1.80c. to 1.85c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.80c. to 1.85c. for Tank, 1.90c. to 1.95c. for Flange, 2c. to 2.05c. for Fire Box. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange, and 3.25c. for Fire Box. Refined Bars are 1.58c. to 1.60c.; Soft Steel Bars, 1.62½c. to 1.65c., and Hoops, 1.90c. to 2c., base, on dock.

Iron and Industrial Stocks.

The event of the week was the very sharp decline of values at the opening of the exchanges on Monday, all the active issues suffering. This was followed by a rally on Tuesday and by another break to-day, caused primarily by disquieting crop reports.

	Bid.	Asked.
E. W. Bliss, common.....	145	152
E. W. Bliss, preferred.....	130	140
Cramp's Shipyard stock.....	83	85
Dominion Iron & Steel Company.....	39	..
Empire Iron & Steel, common.....	6	8
Empire Iron & Steel, preferred.....	33	45
National Enam. & St., common.....	25	27
National Enam. & St., preferred.....	86	88
New Haven.....	4½	4½
Otis Elevator, common.....	33½	35
Otis Elevator, preferred.....	95½	97
Pratt & Whitney, preferred.....	85	90
U. S. Cast Iron Pipe Company, common.....	7½	8
U. S. Cast Iron Pipe Company, preferred.....	36½	38
U. S. Projectile.....	119	..
Va. C. I. & C., stock.....	9	16
Va. C. I. & C., bonds.....	44	48
H. R. Worthington, preferred.....	110	116
American Can Company, common.....	25	25%
American Can Company, preferred.....	74¾	75

International Steam Pump Company.—The amalgamated balance sheet of the International Steam Pump Company and the constituent companies for the year ended March 31 is as follows:

Assets.

Real estate, &c.....	\$30,361,496
Stocks and bonds of other companies owned.....	908,033
Stocks and supplies on hand.....	3,201,594
Bills and accounts receivable.....	3,844,296
Payment in advance.....	23,384
Cash.....	672,012
Total.....	\$39,100,815

<i>Liabilities.</i>	
International Steam Pump Company :	
Preferred stock.....	\$12,500,000
Less	
In treasury.....	3,650,000
Total.....	\$8,850,000
Common stock.....	15,000,000
	\$23,850,000
Henry R. Worthington :	
Preferred stock.....	2,000,000
Common stock.....	5,500,000
	7,500,000
Worthing Pumping Engine Company :	
Capital stock.....	500,000
The George F. Blake Mfg. Company :	
Common stock.....	\$2,000,000
Blake & Knowles S. P. Company mortgage :	
Bonds outstanding (about).....	1,000,000
Preferred stock, B. & K. S. P. Company,	
Limited	500,000
	3,500,000
Total.....	\$35,350,000
Creditors	342,463
Preferred dividend payable to stockholders of International Steam Pump Company	132,750
Profit and loss account :	
Credit balances, March 31, 1900, as to International Steam Pump Company and allied companies.....	\$2,349,158
Profits for year ending March 31 :	
International Steam.....	\$432,533
H. R. Worthington.....	643,912
Geo. F. Blake Company	609,490
Worthington P. Company.....	149,925
Total.....	\$1,835,870
Less office expenses.....	63,238
	1,772,632
Total.....	\$4,121,790
Dividends	846,188
	3,275,602
Total.....	\$39,100,815
The profit and loss account shows :	
Surplus accrued since incorporation	\$1,813,907
Dividends	846,188
Balance.....	\$967,719
Profits for year	1,772,632
Total profits	\$2,740,351
Less dividends	778,000
Undivided net profits	\$1,962,351

From the above there has been declared a dividend on the common stock amounting to \$490,500, leaving a net surplus to be carried forward of \$1,471,851 after deducting charges during the two years for reserves for depreciation on plants, patterns and drawings aggregating \$532,881. Max Nathan, treasurer of the International Steam Pump Company, in his report for the year ended March 31, says: "The amount of \$30,361,496 shown in the amalgamated balance sheet represents the total of the International Steam Pump Company and their constituent companies, for real estate, buildings, machinery, plant, tools, fixtures, patents, patterns, drawings, good will, &c.; also the holdings of the International Steam Pump Company of \$5,497,500 common stock of Henry R. Worthington and £200,000 ordinary shares of the Blake & Knowles Steam Pump Works, Limited, and the good will of the respective plants. During the year there has been deducted from this account the sum of \$480,930 on account of sundry small adjustments affecting the original acquisitions of the properties. There have been no changes in the book value of the stocks of other companies owned for several years. The amount of \$3,844,296 standing on the books of the various companies is believed to be all good and recoverable. All doubtful balances have been written off against profits and a further reserve is provided to meet any possible losses in the collection of outstanding accounts."

At a special meeting of the stockholders of the Cambria Steel Company the sale of all the company's property and assets to the Conemaugh Steel Company was authorized; 233,894 shares out of a total of 320,000 were voted, all in favor of the proposition. The resolution adopted read as follows: "Resolved, That a sale of the property and assets of the Cambria Steel Company to the Conemaugh Steel Company, a corporation organized under the general corporation laws of Pennsylvania, is hereby authorized and approved, and the directors of the Cambria Steel Company are authorized and directed to take such action as may be necessary to properly carry

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING JULY 10, 1901.

Cap'l Issued.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Closing quotations.	Sales.
\$10,000,000 Am. Bicycle Co., Com.	5	500
20,000,000 Am. Bicycle Co., Pref.	24	24½	25	25	600
10,000,000 Am. Bicycle Co., Bonds.
29,000,000 Am. Car & Foundry, Com.	30½-32½	30 -31%	29½-31%	29½	1,100	
29,000,000 Am. Car & Fndry, Pref. \$.	86½-89%	86 -88	84½-86½	84½	4,800	
7,500,000 Bethlehem Iron†.	61	60%	.....	125	
15,000,000 Bethlehem Steel‡.	23	23	23	550	
7,974,550 Cambria Iron, Phila.*	46¾-48	.....	150	
16,000,000 Cambria Steel**.	26½	25%	24½-25%	325	
17,000,000 Colorado Fuel & Iron.	108 -111	105 -107½	102 -105%	102½	8,000	
24,410,900 Crucible Steel, Com.
24,399,500 Crucible Steel, Pref.
1,975,000 Diamond State Steel 	3½-3¾	3½	.....	.....	550	
15,000,000 International Pump, Com.	38¾-39	38	38	38	950	
8,850,000 International Pump, Pref.	83 -84	.....	.....	.....	200	
11,000,000 International Silver.	7½-8¼	7½	7 -7½	7	1,400	
10,750,000 Penna., new, Com., Phila.
16,500,000 Penna., new, Pref., Phila. \$.	88½	88	87½-88	700	
12,500,000 Pressed Steel, Com.	43½-44	43	43	800	
12,500,000 Pressed Steel, Pref.	85	84½-85½	.....	500	
27,191,000 Repub. Iron & Steel, Com.	19½-21	19½-20½	19½-20½	19½	9,700	
20,306,900 Repub. Iron & Steel, Pref.	74 -75	73½-74½	72½-74½	73	4,820	
7,500,000 Sloss-Sheffield S. & I., Com.	34½-35	33½-34½	33½	400	
6,700,000 Sloss-Sheffield S. & I., Pref. \$.
20,000,000 Tennessee Coal & Iron.	65 -69	63½-66½	61½-66½	62½	12,320	
1,500,000 Tidewater Steel
506,473,400 U. S. Steel Co., Com. 	43 -47	43½-45½	43½-46½	43½	335,810	
508,486,300 U. S. Steel Co., Pref. 	93½-96%	93½-96	93½-96½	94	119,900	
1,500,000 Warwick I. & S. 	7	7	100	

Cambria Warrants, 6,530.

Preferred stocks 7% cumulative unless otherwise stated. *7% Non-Cu. **New stock. | Par \$10. || Par \$50. \$1 paid in. || Authorized Capital \$550,000,000 Common; \$555,000,000 Preferred; *Par \$50. **\$10.50 per share paid in. +6% guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph.

Bonded Indebtedness: American Bicycle Co., \$10,000,000 sinking fund gold debentures 5%; Cambria Iron Co., \$2,000,000 6% debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Diamond State Steel Co., property leased from Diamond State Steel Co. at 4% on \$1,000,000, \$6.25 on Steel stock paid in, \$1.25 called for June 1st, total capital \$30,000,000; International Pump: Blake & Knowles S. P. Co. \$1,000,000 6%; Tennessee C. I. & R. R. Co., \$8,367,000 6%, \$1,114,000 7%; \$1,000,000 7% cu. cu. pref.; Pennsylvania Steel, \$1,000,000 5% Steelton 1st, 1917, \$2,000,000 5% Sparrow's Point 1st, 1922, \$4,000,000 consolidated, both plants; Bethlehem Iron, \$1,351,000 5% maturing 1907, interest and principal guaranteed by Bethlehem Steel Co.; Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co., Col. Fuel Co. Gen. Mort. 6% \$880,000, Col. Coal & Iron Co. Mort. 6% \$2,648,000, Col. Fuel & Iron Gen. Mort. 5% \$2,674,000, also outstanding \$2,000,000 preferred stock; Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6%, \$2,000,000, Sloss I. & S. general mortgage 4½% \$2,000,000 U. S. Steel Corporation \$304,000,000 5% gold bonds, also Am. S. & W. Co. \$130,656, Federal Steel Co. \$9,922,000 Illinois 5%, \$7,417,000 E. J. & E. R. R. 5%, \$1,600,000 Johnson 6%, \$6,732,000 D. & I. R. R. R. 5% \$1,000,000 2d D. & I. R. R. R. 6%, \$10,000 land grant D. & I. R. R. R. 5%; National Steel \$2,561,000 6%

this resolution into effect." Another special meeting of the Cambria Steel Company will be held August 15 to vote on the proposed merging of the property and franchises of the company with those of the Conemaugh Company. After this meeting steps will be taken to turn over the property and franchises which will then be held by the Conemaugh Company to the new \$50,000,000 Cambria Steel Company.

Dividends.—The Allis-Chalmers Company have declared a dividend of 1½ per cent. on their preferred stock, payable July 25.

The International Steam Pump Company have declared the regular quarterly dividend of 1½ per cent. on their preferred stock, payable August 1. Books close July 13 and reopen August 2.

OBITUARY.

JOHN MARTIN LONG.

In the demise of John Martin Long, head of the Long & Allstatter Company of Hamilton, Ohio, that little city and the machinery manufacturing interests of the country generally suffer a genuine loss. He was born in the village of Mettingen, Westphalia, October 14, 1825. His parents removed to this country in 1836, locating first in Richmond, Va., and afterward settling in Cincinnati. In that city he received his education and technical training as a machinist, removing to Hamilton in 1854 as foreman in the shops of Owens, Lane & Dyer, with whom he remained for a little more than one year. In Hamilton, at this date, Peter Black was the proprietor of a small machine shop. There was also a firm by the name of Allstatter & Schleisman, who were doing a small business in the way of cutting files and sickles. Three of them embarked in business together under the firm name of Long, Black & Allstatter. They did a varied business, from the making of broom handles, lathes and sickles for reaping machines to the building of harvesting machinery after original designs of their own. In

the making of their sickles they were very materially hampered by the crude machines then in use for shearing and punching. Mr. Long designed a set of machine tools for their own use which not only filled the bill to their own satisfaction, but brought them so many requests for duplicates that they were practically forced into this branch of machine tool production. In 1871 Peter Black retired and seven years later the present company were incorporated with a capital of \$200,000.

NOTES.

JOSEPH EIKEL, president of the Eikel-Breustedt Company, Waco, Texas, died at his home in that city June 22 of peritonitis, after an illness of only a week. Mr. Eikel was born near New Braunfels, Texas, in 1850, and after receiving a common school education entered business early in life. In 1876 he went to Waco, and engaged in the hardware business with William Breustedt, under the firm name of Eikel & Breustedt. Mr. Eikel was president of the Waco Cotton Machine Company, and was interested in a number of other enterprises.

HARRY P. DOANE, superintendent of the Morgan Engineering Company, Alliance, Ohio, died on July 1, aged 45 years.

DAVID M. JONES, founder and proprietor of the D. M. Jones Foundry, Utica, N. Y., died suddenly on June 29 of apoplexy, aged 70 years.

JOHN H. TEGMEYER, a well-known civil engineer, died July 4 at Baltimore, Md., of paralysis, aged 80 years. Mr. Tegmeyer early gained a reputation as a railroad man and bridge builder. About 50 years ago Mr. Tegmeyer, in conjunction with Wendell Bollman, formed the first company for the building of iron bridges and erected a plant for the purpose in Baltimore.

GEORGE E. NYE, inventor of the Nye steam vacuum pump, died suddenly on the 7th inst., at his residence in Austin, a Chicago suburb. Mr. Nye was 68 years old and was a native of Boston, Mass.

PERSONAL.

Samuel Benner, who recently returned to Pittsburgh from Mexico, where he represented the Carnegie Steel Company, has taken charge of the export bureau recently created at Pittsburgh to handle foreign sales of the Carnegie Steel Company, Illinois Steel Company, National Steel Company and American Steel Hoop Company.

R. Geddis of Jones & Laughlins, Limited, Pittsburgh, sailed for Europe on Saturday, July 6. Mr. Geddis goes abroad in the interests of his firm and will remain until September.

John Machin, formerly superintendent of Struthers Furnace of the Struthers Furnace Company, Struthers, Ohio, has resigned and has accepted a similar position at Hanna Furnace of the Republic Iron & Steel Company, at Youngstown, Ohio.

John McConnell of Coatesville, Pa., has been appointed superintendent of the Ensley steel department of the Alabama Steel & Shipbuilding Company.

J. Pierpont Morgan returned from Europe on July 4 by the "Deutschland."

W. G. Park has resigned from the directorate of the Crucible Steel Company of America owing to ill health.

George S. Graham has succeeded E. R. Dick of New York as president of the Cuban Steel Ore Company.

Arthur Hollis, formerly superintendent of the Columbia Mills of the Susquehanna Iron & Steel Company, has accepted a similar position with the Portland Iron & Steel Company, Portland, Maine.

Joseph R. Wick has resigned as secretary of the Midland Steel Company of Muncie, Ind.

John K. Frye has resigned as purchasing agent of the Lorain Steel Company and will enter the firm of Banning, Cooper & Co. of Pittsburgh.

Frank B. Ward, who for over two years had charge of the Cleveland office of Manning, Maxwell & Moore, has resigned his position to take charge of the Pittsburgh and Cleveland branches of the Niles Tool Works Company, as manager, with headquarters in the Carnegie Building, Pittsburgh. Mr. Ward was connected with the Edgar Thomson Works of the Carnegie Steel Company from 1881 to 1886.

Enoch James, who was for some time the manager of the new Dowlais Works at Cardiff, Wales, and who has been general manager of the Patent Shaft & Axletree Company of Wednesbury, is now visiting the steel works of this country.

William Garrett of the Garrett & Cromwell Engineering Company of Cleveland, Ohio, has returned from his European trip.

Percival Roberts, formerly president of the American Bridge Company and now a member of the Executive Committee of the United States Steel Corporation, sails for Europe on Saturday.

George H. Wadsworth, general superintendent for the last six years of the Falls Rivet & Machinery Company of Cuyahoga Falls, Ohio, has resigned to assume the management of the Wadsworth & Sherwin Improved Core Machine Company of Cuyahoga Falls, Ohio. The machine will be manufactured by the Railway Speed Recorder Company of Kent, Ohio.

W. O. Fayerweather of the Passaic Rolling Mill Company, Paterson, N. J., sails for Europe on Saturday to visit Switzerland. He will return in the middle of August.

Walter J. Drummond, son of Michael J. Drummond, has been admitted to partnership in the old firm of W. J. Drummond & Co., New York, dealers in and manufacturers of cast iron pipe.

The Heating, Ventilating & Foundry Company.—The Heating, Ventilating & Foundry Company of Pittsburgh have just completed the erection and equipment of a new and model foundry and machine shop at Lazeaville, W. Va. The main building is 65 x 145 feet, and is arranged on the continuous plan. A private siding on railroad switch runs along the full length of the

building. The raw material, such as iron, coke, &c., is unloaded from cars onto a platform and into sheds, surrounding the cupola, which has a melting capacity of 5 tons per hour. This cupola is located on the side of a molding room, and is equipped with all the latest improvements in cupola practice. Directly in front of the cupola and about 25 feet distant is situated a 2-ton jib crane, for handling large ladles of iron and heavy castings. After the castings are made they pass into the tumbler and emery room, adjoining the molding room, where they are cleaned and ground, and if the castings require machine work, they pass into the machine shop, and then into the store or ware room. In case no machine work is necessary the castings pass directly into the storage room, from where they are loaded into cars, ready to ship. There is no rehandling of either the raw material or the manufactured goods. The power used for running the blower for cupola blast, elevator, cleaning barrels, emery wheels, drill presses, lathes, planers, &c., is furnished by two 25 horse-power gas engines, which are so arranged that they can be run separately or together. The whole plant will be heated and ventilated by what is known as a mechanical furnace system, consisting of large horizontal furnaces, made by the company, for heating and blowers for circulating the air, both for winter and summer. The offices consist of four rooms, two rooms on the ground floor and two above. These offices are heated and ventilated by a fire place system, with apparatus made and controlled by the company. The product will be about 5 to 10 tons per day, and will be increased as fast as possible.

New Publications.

KELLY'S DIRECTORY OF MERCHANTS, MANUFACTURERS AND SHIPPERS OF THE WORLD. 1901. Published by Kelly's Directory offices, U. S. Branch, 5 Beekman street, New York.

The fifteenth edition of Kelly's well-known directory has been issued. It is, of course, an exceedingly ponderous volume. The general arrangement is that different countries are taken up in turn, there being some general statistical information as a preface. Under each town or locality the business firms are grouped by classes. The work deals first with the British colonies, with the countries of Europe and their colonies, the United States, Mexico and South American countries. There is a very large section devoted to London merchants and manufacturers and to those of England, Scotland and Wales. The book is very complete and accurate so far as we have had occasion to test it.

THOMAS' AMERICAN MACHINERY, IRON, STEEL AND METAL TRADES REFERENCE BOOK. Thomas Publishing Company, New York.

Bound in handy form and in such shape that new pages may always be substituted, this directory covers the metal trades of the United States arranged alphabetically by States and cities. We have tested it in some branches of the metal industries and have found it accurate and up to date. Ratings are added. We understand that the annual subscription price is \$25.

Allegheny Steel & Iron Company.—The new sheet mills of the Allegheny Steel & Iron Company, at Tarentum, near Pittsburgh, will soon be completed. Some of the machinery has already been tried out and runs very satisfactorily. The works of this concern consist of a 50-ton basic open hearth furnace, a bar mill of special design, six sheet mills and three cold mills. The six hot mills are driven by a 38 x 60 inch Corliss engine, heavy type, and the bar mill by a 50 x 72 inch Corliss engine, heavy type. The concern will make from 60 to 70 tons of steel sheets per day, and have a very complete plant. Plans are under way for a material enlargement of the works, with a view of taking up the manufacture of other products, galvanized sheets included, but these plans have not been fully developed as yet. The Pittsburgh offices of the concern are in the Park Building.

HARDWARE.

THE discussion in regard to the business office methods of the large corporations should be suggestive to the smaller corporations and manufacturers generally, many of whom may find that the criticisms apply to the conduct of their own business. It is no new thing for the trade to be obliged to complain of the way orders are delayed and the difficulty of getting information regarding them. Such complaints were made before the word Trusts was used in a business way, and they would probably be made for good cause if no large corporations were to-day in existence. Some manufacturers seem to think that orders are to be filled at their convenience, and the buyer has only to wait until he receives his bill before it comes to be any concern of his. It would seem the most natural thing when an order that cannot be filled at once or within a very few days reaches the office to drop a line to the buyer acknowledging its receipt and stating when the goods can probably be shipped. This, we are advised, is done so seldom as to cause surprise when a manufacturer shows sufficient enterprise to do it.

The world of trade is not going to be revolutionized by a few large corporations. The personal equation is not going to be eliminated from business. Human nature in the office of a large corporation is not very different from human nature in the smaller office. The business of the large concern must be managed with system and brains, and this means prompt care of orders and immediate attention to correspondence. But we are asking a good deal when we expect this to blossom into existence the day after announcement is made of the incorporation of the large concern.

That which will help the smaller concern is the desire upon the part of all buyers, whether in retail or wholesale trade, to deal with the head of a concern, and to reach the head by correspondence. Men do not care to trade with a machine if they can do their business with a man, and the smaller manufacturer, by coming into personal touch with the trade, has an advantage over the representative of the larger concern who occupies a subordinate position.

In the not far away future there is coming a time when sellers will be asking for orders more urgently than they need to do in these booming days, and it is then that the personality of the small manufacturer will show its commercial value and it will be found that individuality is just as important a factor in trade as it has always been.

That the consolidations possess great advantages in the matter of production is unquestionable, and there can be little doubt that the tendency toward their formation represents a radical and permanent change in producing methods. At the same time there are considerations which are operating against them. One phase of the situation is illustrated in the recent remark of the treasurer of a consolidation representing many millions capital: "A man has simply to say that he is not in the trust and every wholesale and retail dealer welcomes him. He is not called upon to cut our prices, he is asked only to do as well, and he gets the order. We are on the defensive at every point." This undoubtedly represents a widespread feeling. The question is, How long will it last?

Condition of Trade.

At this season many influences tend to reduce the volume of business. Travelers are nearly all at home and there is thus a cessation in the active pursuit of orders. Principals and employees are enjoying or looking forward to vacations. With the lessened demand for goods there is with both manufacturing and mercantile establishments more or less attention given to the review of the course of things during the half year just passed and the closing up of its business. Preparations are also making for the prosecution of trade in the opening season. This calls for new plans and enterprises, the consideration of which receives a good share of the attention of progressive manufacturers and merchants. Factories also are being shut down and overhauled and in some cases enlarged to meet the demands of the trade with increased facilities. The condition of the market, too, encourages a waiting policy, so that while there is a good deal of buying going on, it is not, as a rule, in especially large quantities. While these influences operate against a heavy volume of business, it is gratifying to note that there continues to be a good demand, and the general situation is eminently satisfactory. The promise of the crops is on the whole excellent, and there thus appears to be a basis for general prosperity. Notwithstanding setbacks in certain directions and in certain lines of goods, it is evident that the general export business of the country is larger than ever before, and that in this trade Hardware and metal products are holding an important place. Industrial and manufacturing enterprises continue to be actively prosecuted and there is more building than for several years. The state of the market is such that the trade in most lines feel safe in placing orders for their requirements for the near future, but there is practically no disposition to speculate and a conservative policy is generally regarded as prudent.

Chicago.

(By Telegraph.)

Shelf Hardware preserves its remarkable activity. Some of the jobbers were compelled to work their force at night during the Fourth of July week, which is unprecedented in the history of local trade. The demand shows no abatement and is of the same general character as that which has prevailed for so many months. Scarcity continues in Stamped Goods, Japanned Ware and numerous seasonable goods. The cause given is that manufacturers are unable to get satisfactory deliveries of material. The only line in which prices have been reduced is in Sheets, and this is really a nominal reduction only, as no sheets can be had at the reduced prices. The company making the reduction can furnish no Sheets on new contracts, as most of their mills are closed and jobbers see no reason why they should reduce their prices from stock, as they do not know whether they will be able to replace what they sell. Prices of other products show somewhat of a tendency to advance rather than to decline. It had been expected that Wire products would be easier by this time, but no change has been made in this line. Heavy Hardware Jobbers report a continued strong demand for everything in their line, the volume of business up to this time exceeding that for the corresponding portion of last month. The outlook is very encouraging for all branches of the Hardware trade.

NOTES ON PRICES.

Wire Nails.—Orders for Wire Nails are less frequent and smaller quantities are being called for. Outside mills are now offering Nails at slight concessions in price, which causes a feeling on the part of many in the trade that the market price may be affected thereby before long. The conservative trade are avoiding the accumulation of stocks in anticipation of a possible decline

In prices. Pittsburgh quotations remain unchanged, as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.30
To jobbers in less than carload lots.....	2.35
To retailers in carload lots.....	2.40
To retailers in less than carload lots.....	2.50

New York.—Local demand is fair for Wire Nails, but not altogether uniform. It is largely confined to small lots from store. Quotations are as follows:

To retailers, carloads on dock.....	\$2.53
Small lots at store.....	2.60

Chicago, by Telegraph.—Specifications on contracts for Wire Nails are heavy, buyers being urgent for prompt delivery. New business has fallen off to some extent, but not seriously. Prices are maintained in this territory, but the heavy reduction in freight rates to be made July 15 to Missouri River points and beyond will enable buyers in that section to supply themselves much more cheaply. Jobbers report a surprisingly strong demand for this time of the year. They invariably look for a decidedly smaller business during the month. Carload lots are quoted at \$2.45 and small lots at \$2.55, with a concession to \$2.50 to best buyers.

Pittsburgh.—Demand for Wire Nails is only fair, and the market is without special feature. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.30
To jobbers in less than carload lots.....	2.35
To retailers in carload lots.....	2.40
To retailers in less than carload lots.....	2.50

Cut Nails.—The June prices, which were reaffirmed by the Cut Nail Association for the month of July, have not been strictly adhered to by some Eastern jobbers. It is intimated that prices have been made which enable them to sell Nails in less than carload lots below schedule prices. The last meeting of the manufacturers, it is understood, was not entirely harmonious, and that for a time the continued existence of the association seemed in danger. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....	\$2.00
Less than carload lots.....	\$2.05 to \$2.10

New York.—The demand for Cut Nails is moderate, with considerable irregularity in prices. It is reported that Nails have been sold from store by jobbers as low as \$2.15. New York quotations for carload and less than carload lots are based on the above prices, to which Pittsburgh freight has been added:

Carload lots on deck.....	\$2.13
Less than carload lots on deck.....	2.18
From store.....	\$2.15 to \$2.25

Chicago, by Telegraph.—The quantity of Cut Nails moving keeps up to the average of this year, while the price is steady at \$2.35 from stock for small lots.

Pittsburgh.—Makers of Cut Nails have reaffirmed June prices for July delivery. Demand is fair. The market is represented by the following quotations, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....	\$2.00
Less than carload lots.....	\$2.05 to \$2.10

Barb Wire.—While the demand for Barb Wire is not so large from some sections of the country, mills have not yet caught up with the orders on their books. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted.....	\$2.60
To jobbers in carload lots, Galvanized.....	2.90
To jobbers in less than carload lots, Painted.....	2.65
To jobbers in less than carload lots, Galvanized.....	2.95
To retailers in carload lots, Painted.....	2.70
To retailers in carload lots, Galvanized.....	3.00
To retailers in less than carload lots, Painted.....	2.80
To retailers in less than carload lots, Galvanized.....	3.10

Chicago, by Telegraph.—Manufacturers of Barb Wire are still 30 days behind in filling orders, but state that they are now gradually catching up. The jobbers of this district are absolutely without stock, and whenever they

receive a shipment are compelled to divide it *pro rata* among their clamorous customers. They report quite a number of dealers now placing orders for fencing to make sure of receiving it in time for their fall trade. Carload lots are quoted at \$2.75 for Painted, and \$3.05 for Galvanized. Less than carloads are quoted at \$2.85 and \$3.15 respectively, with a shading of 5 cents to the best trade.

Pittsburgh.—Demand for Barb Wire is somewhat dull, having fallen off a good deal recently. For domestic trade we quote: Galvanized Barb Wire, \$2.90 in carload lots to jobbers, and Painted, \$2.60. Terms, 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

Plain Wire.—The call for Plain Wire continues urgent. Mills are still behind on their orders. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

	Base sizes.	Plain.	Galv.
To jobbers in carload lots.....	\$2.25	\$2.65	
To jobbers in less than carload lots.....	2.30	2.70	
To retailers in carload lots.....	2.35	2.75	
To retailers in less than carload lots.....	2.45	2.85	

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances.

Nos.		Base.	Galvanized
6 to 9.....		\$0.40 extra	
10.....	\$0.05 advance over base	.40	"
11.....	.10	.40	"
12 and 12½.....	.15	.40	"
13.....	.25	.40	"
14.....	.35	.40	"
15.....	.45	.75	"
16.....	.55	.75	"
17.....	.70	1.00	"
18.....	.85	1.00	"

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—The demand for all classes of Smooth Wire is so strong that the mills are a month behind on their orders. Jobbers report a continued heavy trade representing all classes of consumers as well as dealers. Carload lots are quoted at \$2.40, base, and small lots from stock at \$2.50, with \$2.45 quoted to the best trade.

Pittsburgh.—There is a continued heavy demand for Plain Wire and tonnage is much larger than ever before at this season of the year. We quote:

	Plain.
To jobbers in carload lots.....	\$2.25
To jobbers in less than carload lots.....	2.30
To retailers in carload lots.....	2.35
To retailers in less than carload lots.....	2.45
Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, \$1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.	

Conductor Pipe and Eave Trough.—The market on Conductor Pipe and Eave Trough, plain and galvanized, is in good condition, as reflected in the volume of business and the fairly regular price of the goods, whether the product of the consolidated companies or those outside. The system of prices and discounts is devised to give the dealer North, East, South and West the goods at a uniform price. Where the freights vary compensation is made in the rate of discount according to the territory the goods are sold in.

Shot.—Under date July 8 the following revised prices on Shot are announced by the Eastern manufacturers, terms net cash 30 days, or 2 per cent. discount for cash in 10 days:

	Per 25-lb. bag.
Drop Shot, sizes smaller than B.....	\$1.50
Drop Shot, B and larger sizes.....	1.75
Buck Shot.....	1.75
Chilled Shot.....	1.75
Dust Shot.....	2.00

In lots of 2000 pounds and upward taken at one time a discount of 20 cents per 100 pounds will be allowed.

Lead Pipe and Sheet Lead.—Under date July 1 the following prices for Lead Pipe, Sheet Lead, &c., were

announced, subject to the regular discount of 20 per cent.:

	Per pound.
Lead Pipe.....	6½c.
Sheet Lead.....	7½c.
Tin Lined Lead Pipe.....	12½c.

Cordage.—The different qualities of Rope and the light demand make the market an unsatisfactory one. Manufacturers' prices, on the basis of 7-16-inch and larger, according to quality and quantity, range as follows: Sisal Rope, 6½ to 7½ cents per pound; Manila Rope, 9¾ to 10½ cents per pound.

Paints and Colors.—**Leads.**—The advances in the price of Linseed Oil and the extreme heat have reduced the demand for White Lead in Oil. No change has been made in the price of Lead in Oil, which is quoted as follows: In lots of 500 pounds and over, 6½ cents; in lots of less than 500 pounds, 7 cents per pound.

Oils.—**Linseed Oil.**—Another advance of 5 cents per gallon was made in the price of Linseed Oil on July 6. City Raw is now quoted at 82 cents per gallon in lots of five barrels or more, and at 83 cents in lots of less than five barrels. State and Western Raw Oil is quoted at 80 to 81 cents, according to quality. Calcutta Raw Oil is quoted at 85 cents per gallon. Boiled Oil is 2 cents per gallon advance on Raw. The high price of Oil has lessened the demand, which is confined to small lots.

Spirits Turpentine.—The Turpentine market has gained strength during the week, and prices are slightly higher. The improved condition resulted from stronger Southern advices. The local market is represented by the following quotations, according to quantity: Southerns, 37½ to 38 cents; machine made barrels, 38 to 38½ cents per gallon.

The Retail Hardware Merchant's Pamphlets, Circulars, &c.

There is large opportunity for retail merchants to use circulars, pamphlets, &c., in cultivating trade. We refer below to some forms of such printed matter which have been used successfully by enterprising merchants. We invite samples of others which have proven themselves trade winners, especially if they contain unusual features of arrangement or subject matter.

MEETING CATALOGUE HOUSE COMPETITION.

One of the circulars issued three or four times a year by E. M. Austin, Litchfield, Ill., was referred to at some length in our issue of April 11, 1901. A recent circular contains, in addition to illustrations and prices of Hot Weather Goods, an announcement of the position assumed by this firm regarding catalogue house competition, also a comparison of catalogue house prices and local or home prices. The announcement is headed

AUSTIN PAYS THE FREIGHT.

We have been handed a spring catalogue of a large grange supply house in Chicago that brags it sells the consumer lower than the retailer. The following shows how they deceive the people. Articles, sizes and numbers guaranteed identically the same, also quality. In addition to their prices you must pay high freight rate 250 miles, subject to delay and breakage en route. Our prices are usually lower, as noted below. No freight, delay or breakage. Besides we give you cash rebate checks. Ten dollars' worth returned good for 25 cents in trade. If article is defective we are not 250 miles away, but you know from our reputation we will do what is right. Above catalogue always on our desk. We will get you anything it contains at their price, you paying transportation as you would do if sending to them.

A RETAIL MERCHANT'S CATALOGUE.

D. A. Clark, Van Wert, Ohio, issued a 30-page catalogue for 1901, including illustrations and descriptions of Household Necessities, Cook and Heating Stoves, Warm Air Furnaces, &c. On the last page is an alphabetically arranged list of over 200 useful articles handled. A number of *The Iron Age* advertising cuts were used to illustrate small articles with good results. Mr. Clark states that he was prompted to issue the catalogue by reading

articles on the subject which have appeared in *The Iron Age*, and that from the returns received he believes that the expense and labor were fully repaid by increased sales.

AN ATTRACTIVE CIRCULAR.

The occasion of moving into a new store building was utilized by Poundstone-Refior Hardware Company of Ottawa, Ill., by issuing a well printed 12-page circular 9 x 12 inches in size to their trade. It was principally devoted to illustrations and descriptions of Hardware, Stoves, Ranges, Agricultural Implements, Carriages, Sporting Goods, &c. On the first page a view of the new building and portraits of Messrs. Poundstone and Refior were presented. Two pages and part of a third were devoted to a sketch of their "new home" and its different departments.

AN EIGHT-PAGE PAPER.

A recent issue of "The Oliver News," which is published four times a year by F. W. Oliver Company, Niagara Falls, N. Y., contains eight pages, 10½ x 14 inches in size. It is replete with illustrations and descriptions of season goods. This advertising medium for the company's retail trade is just entering its third year of successful existence.

"JUST OUT."

A newspaper advertisement of Frank C. Beall of Frostburg, Md., emphasizes the fact that goods can always be had at his place of business. The advertisement is headed by a picture of a large white bell, which is used as a sign in front of his store, and reads as follows:

"Just Out."

We never say "we're just out." If we have sold out former stock we will get you whatever you want. It's not like pulling teeth to get anything you wish in Hardware at this store. Just say what it is and we'll send it to you. Our stock is always well selected with a constant view toward the desirability of good qualities and the necessity of economical prices.

TWENTIETH CENTURY SALUTATIONS

Early in the present year the Griffith Hardware Company of Rushville, Ill., issued a neat folder entitled "Twentieth Century Salutations." It reviewed the growth of the business, which was started nearly 50 years ago as Griffith & Brother. One of the brothers is still living, and associated with him in the business are his son and nephew. His grandson is also identified with it.

SUCCESSFUL ADVERTISEMENTS.

A 12-page pamphlet has been gotten out by Chester D. Clapp of Toledo, Ohio, containing nearly 30 advertisements relating to Steel Ranges. The advertisements are nearly all original and have been used with success in Mr. Clapp's business.

BIDWELL'S ANNUAL.

For the spring of 1901 F. S. Bidwell & Co. of Windsor Locks, Conn., issued a catalogue relating to Agricultural Implements, Seeds, Fertilizers, Building Materials, Hardware, Paints, &c. Inclosed in the catalogue was an order sheet to be filled out by customers desiring goods shipped to them.

Hardware Club Manual for 1901.

THE manual for 1901 of the Hardware Club has just been issued to the members and clubs on their exchange list, having been compiled by A. D. Clinch, chairman of the Committee on Admissions. The prosperous condition of the club is indicated by the fact that the active membership of 600 is full and has been for some time, there being a waiting list, containing a number of names. There are also 142 non-resident members.

J. F. Berner, wholesale and retail dealer in Hardware, House Furnishing Goods, &c., 515 William street, Buffalo, N. Y., advises us that he will be pleased to extend any assistance that he can in the way of securing accommodations, &c., to his brother Hardware merchants who visit that city during the Pan-American Exposition now in progress.

THE RETAILER; HIS RIGHTS AND HIS POWER.

BY THE PRESIDENT OF THE NATIONAL RETAIL HARDWARE DEALERS' ASSOCIATION.

MAN was born with lungs. This fact establishes his natural right to breathe. He was also born with intellect and hands. This fact establishes his natural right to labor with mind and muscle. So nature, which is neither illogical nor incomplete, also supplies air for the lungs and material for mental and physical labor. Man's right, therefore, to live, to labor and to elect what disposition shall be made of the products of his labor are natural rights, they are indefeasible and inalienable, and any system of human relations which declines to acknowledge the verity of man's natural rights will surely fail.

Slavery was not wrong because the slave was cruelly treated, improperly housed, fed or cared for. This affirmation in many cases was untrue. But slavery was wrong because man's natural rights were violated.

Trade Rights in the Commercial World.

There are in the commercial world certain "trade rights" which may very properly be likened to man's natural rights in that the demand from organized society which creates the retail Hardwareman also creates his field of operation. The modern method of Hardware distribution is rational and sound. First, the manufacturer; second, the jobber; third, the retailer. These three, in the order named, are the trinity of commerce and their respective spheres are well defined. The manufacturer supplies the jobber, the jobber supplies the retailer, the retailer the consumer. That this is the natural relation is thoroughly understood by manufacturer, jobber and retailer, and that this natural right of the retailer is violated both by the manufacturer and jobber is evidenced by facts indisputable. Out of this condition grows the contention of the retail dealers with the manufacturer and jobber who trample on their natural rights, and out of this condition will grow an "irrepressible conflict."

Permanency of Jobber and Retailer.

It is idle to talk about the passing of the retailer. It is equally absurd to anticipate the decline of the jobber. Both are indispensable members of the commercial entity, and for mutually profitable existence there should be harmonious relations. But the manufacturer and jobber in their zeal for business overstep the boundary of their respective spheres and, without apology or ado, break the first commandment of the commercial decalogue, "Thou shalt not covet retail trade."

Trespassing on Retail Territory.

This tendency to trespass on retail territory is manifest in many lines, but the distribution of Builders' Hardware is a splendid example of the frequent violation of the retailer's natural rights. Jobbers and manufacturers sell direct and over the heads of their own customers to architects, contractors and owners. These are consumers and therefore belong in retail territory. It is insufficient to suggest that frequently their wants are large and therefore the manufacturer and jobber should sell to them. Such fact cannot change their classification as consumers. A jobber recently received a request from a number of his customers asking that he abandon his practice of selling Builders' Hardware to the consumer. His reply stated that some of the orders were large, and the inference was therefore that he should sell them. And he also inquired what they would promise him in return should he quit the retail field.

A Supposititious Case.

The attitude of this jobber toward his clients is very similar to that of a vender of fruit trees who sold his customer an assortment of trees. The customer held valid title to a piece of ground on which he planted the trees. He dug, pruned, mulched and sprayed. The vender came again that way, but the crop was scarce and small; so he paid little attention to the fruit and offered more trees. His customer bought them at the vender's price, paid the cash, set out the trees and cultivated assiduously. The trees grew large and hung heavy with fruit, ruddy and tempting. The vender

passed again. He saw the fruit, stepped over the boundary lines and began to pluck and gather and put into sacks. The owner (his customer) came and said, "What right have you to come into my field and take the product of my labor?" The vender said, "What will you promise me in return if I quit your field?" Such expressions as these from representative and intelligent jobbers indicate outrageous rapacity and greed on one hand and leering insolence on the other.

The Power of the Retailers.

The retailers of this country are ignorant of their power. A recent investigation showed that in a certain State the capitalization of the members of the retail Hardware association exceeded that of the jobbers in that State, and the membership did not equal 50 per cent. of the State's retailers. More than this, the retailer is the one who comes in personal contact with the consumer. His encouragement or disparagement has great weight in the placing of his merchandise with consumers.

Displacing an Article of Standard Quality.

In the personal experience of the writer an article long recognized as the standard of excellence was and is practically cleared from the shelves and in its place is sold the product of a competitive concern, and this is done easily. Our profits are materially increased, nor is the interest of the consumer in any sense violated. His purchase is of a quality which equals any similar article produced. The change was made because the original concern was contemptuous of a retailer's request. The second concern, whose goods we now handle, was not.

An Appeal to Retailers to Join the National Association.

The attitude of those concerns who hold the retailer in contempt will soon be known to the members of the National Association. Every Hardwareman anywhere in the United States should belong, first, to his State organization and then insist on its affiliation with the National Association. There is absolutely no other plan, argue as you may. This is the move. The community of interest idea, developed by the long heads of railway and other interests, is bringing success. It has a ready application to retail Hardware dealers. The national organization gives them the one opportunity to be felt in the war on those who violate the sanctity of retail territory.

The Reasons for Joining.

1. The membership fee of \$1 is nominal. Any man who is sincere will not hesitate because of the fee.
2. Loyalty to the principles expressed in the constitution is of more value than a hundred fees.
3. Persistence counts. We should enlist for a period equal to that of our sojourn in the Hardware business.
4. We are, and in all conscience should be, self supporting. We ask no money contribution and will accept no financial aid from any manufacturer or jobber in the land. We are men with capital invested. Millions in the aggregate. We will give fair treatment and will demand fair treatment.

The Arkansas Association by unanimous vote joined the National Association June 20. Every Hardware Association in the country not already affiliated should do the same thing at its next executive meeting or next annual convention. This is vital to its interest as well as the interest of the national organization. The volume of Hardware to be distributed is increasing. Our profits in the business and our share in the distribution depend on its being placed through the proper channels. Every Hardwareman should act promptly and should act continuously until "piracy exists no more, and fairness reigns on fields of peace."

The Louis Hoffman Hardware Company, Vicksburg, Miss., at their annual meeting held on July 1 re-elected their old officers, as follows: Louis Hoffman, president; Frank J. Hoffman, vice-president and treasurer; M. F. Evans, secretary. A dividend of 8 per cent. was declared, payable at once, and a handsome amount placed to surplus account. L. Hoffman began business in 1857 and the stock company were formed in 1886.

Notes on Foreign Trade

BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE,
NORFOLK STREET, LONDON, W. C.

Galvanized Goods.

THE trade in Galvanized and Japanned Hollow Ware in this country is confined to comparatively a small number of manufacturers. There is an enormous demand for this class of article, for Galvanized Buckets, Coal Scoops, Foot Tubs, Watering Cans, Oil Cans for Collieries, Turn Up Skips, Seed Hoppers, Hand Bowls, Sanitary Pans, Corn Bins, Wrought Iron Kettles, and 50 other similar articles. In addition to an exceptionally large home demand, the export trade in these goods is unusually large. At the present moment, orders are rolling in from South Africa, Australia and India. The other day I saw an order for Wrought Iron Kettles in four different sizes, 50 gross of each size, for South Africa. The price offered was not satisfactory to the seller, and no business was done. On mentioning the price, however, to a Galvanized Hollow Ware agent, he told me he would be glad of the order at that price, and he saw no reason why it should not prove remunerative. The trade, however, is in a seriously disorganized condition, and there is not much harmony either among the manufacturers themselves on the one hand, or between the manufacturers and their agents upon the other. A gentleman who ought to know assures me that there is no reason why American exporters should not enter the market in these goods, subject, however, to their undertaking to make to English patterns and not to force American patterns here. He says that the steel plates and the galvanizing can be done more cheaply in America in large quantities, while freightage should not prove a serious difficulty, inasmuch as "nesting" can be almost universally resorted to. The especial changes from the American to the English patterns which are required would be, 1, iron rod handles instead of wire; 2, better riveting, and 3, a circular base instead of the flat bottom so common in America. An agency was recently offered to a progressive agent in London by a Staffordshire manufacturer on the basis of 1½ per cent. It was refused as not being worth the trouble on that basis, and after some haggling, 2½ per cent. was agreed upon. If American manufacturers can bring their prices down to 5 per cent. under English prices, and give their agents in London or Manchester 5 per cent., there is every reason to suppose that a good home and export trade can be done. Freight rates from



Fig. 1.—Galvanized Bucket, Fig. 2.—Contractors' Galvanized Seamed Sides.



New York to South Africa are at the present moment more favorable than from Southampton or Hamburg. Although American Hollow Ware is, of course, in a very small way known in this market, American manufacturers as a body do not seem as yet to have seriously tackled the trade over here. I send herewith a few illustrations of the type of Galvanized Buckets which are favored in this market.

Fig. 1 is a patent Galvanized Bucket, with seamed sides, sold in 10, 11, 12, 13 and 14 inch sizes. If the sides are riveted the price is raised 1 shilling. Fig. 2 is a very strong Contractors' Galvanized Bucket, with welded bar hoop top and bottom, stayed front and back. It is made in 11, 12, 13 and 14 inch sizes. Fig. 3 is a

type of English Galvanized Round Foot Tub, made in ten different sizes and three different qualities, the cheapest, medium and strong, hoop or strapping being charged extra. Fig. 4 represents a Galvanized Deep Turn Up Skip, with strapped bottom and bound under wire, the handles being 4 inches below or level with the rim. Made in three sizes and two qualities. These are representative patterns, and indicate the style of thing



Fig. 3.—Galvanized Foot Tub.



Fig. 4.—Galvanized Turn Up Skip.

required on the British market. I shall be happy to supply any inquirer with prices and discounts upon application to the editor.

Hardware in Egypt.

I have once or twice made reference to the possibilities of pushing the Hardware trade in Egypt. American globe trotters now know that Khartoum is easily accessible by rail and boat, but it is not generally known to what extent Hardware is in demand in Egypt itself. A resident in Egypt with some knowledge of the trade thus writes to a contemporary about domestic Hardware which is now required in the land of the Pharaohs:

First as regards the houses. Egyptian houses are not like those of England. They have very thick walls to keep out the heat, flat roofs, for there is little or no rain; venetian blind shutters, to keep out the sun's rays; French windows which are thrown wide open after sunset to let in the cool fresh air; plenty of balconies and verandas, and large gardens. They are not supplied with fire grates, for the average temperature during the winter is about 60 degrees F. (for the past four years the Helouan readings average 70.20 degrees maximum and 49.87 degrees minimum). The ceilings are very high, and altogether the houses are very ornamental and picturesque.

With this description one can now better understand their wants for the house—viz.:

LOCKS AND KEYS.—Doors are locked to prevent the wind blowing them open. The servants sleep in the hall, so that any intruders would wake them at night. What is wanted is a very cheap Stock Lock, Mortise Lock, and Rim Lock. They may be good, but they must be cheap. There is also a good demand for very cheap Cupboard and Box Locks, and Padlocks with hooks and hasps. The Locks now in use are either Egyptian wooden ones or very cheap German Curved Bit Locks.

BOLTS of all descriptions, especially small ones for fastening small doors, and Bolts for the shutters and French windows, so made that by turning a handle they are fastened at the top and bottom (4 feet to 8 feet long).

HINGES for cupboards, &c., and strong ones for windows, shutters and doors, all of which are generally made to lift off.

HOOKS AND STAPLES (screw) for fastening back the windows and shutters. Small ones for the windows and doors, and large ones for the shutters, so that they may be fastened from the inside and will not be bent by the force of the wind on the shutter.

IRON GATES.—Ornamental, of all sizes.

CUTLERY.—Paris hitherto has supplied most of the Cutlery. Cheap Penknives, Scissors, Tin Openers and Steel are also wanted.

STOVES.—Small Gas Stoves for cooking, ranging in price from 25 cents to \$25; Paraffin Stoves, small Coal Cooking Stoves and iron flues for the same; small Asbestos Stoves or Paraffin Lamps for warming the rooms occasionally in winter, and Charcoal Fire Buckets, with and without fire bricks.

MISCELLANEOUS.—Hundreds of other articles which Hardware manufacturers will be able to enumerate for themselves, such as bedsteads with posts and top rails for mosquito nets, Tools, Charcoal Tong, Dust Pans,

Dust Bins large enough to hold only one day's refuse, to stand by the side of the kitchen sink; cheap large Saucepans capable of holding a bucketful of water for the bath, or Washing Trays and Buckets (as yet scarcely seen in Egypt).

AGRICULTURAL MACHINERY, &c.—Pumping Engines, Pumps and Wind Mills, Boilers, Cotton Ginning Machines, Corn Mills, Threshing Machines, Plows, and other Agricultural Implements.

Egypt is dependent on the Nile and its canals for water. Rain is scarce, and in some parts almost entirely absent. Coal is very expensive. Pumps and Pumping Engines are therefore in great demand, and the Engines are made so as to burn cotton canes and farm stubble in place of coal.

British and American Screws.

It is not so many years ago that the Nettlefolds' Screws had no competitors. They possessed valuable patents, particularly that which enabled them to bring the thread of the Screw to the end of the beveled tip. Recently, however, American Screws have been largely purchased, particularly in Australia, with the result that the directors of Nettlefolds, Limited, have felt it necessary to take note of American methods of Screw manufacture. Thus, in extending their new works at Tydu in South Wales, they sent their works manager to the United States, where he had the advantage of going over similar works. The directors also communicated with an expert who had laid out works in your country and he had given them plans which, with certain modifications, had been adopted by them, and are now being carried out. The chairman of Nettlefolds, Limited, J. Arthur Kenrick, well known for his connection with the enormous brass works at West Bromwich, in making his annual speech to the shareholders of Nettlefolds, Limited, remarked that he had heard the other day that some Australian buyers, without making inquiries through their correspondents in England, had been sending their orders to New York and paying 15 per cent. more for goods which they might have obtained of equally good quality in this country. It would be interesting to know why these Australian buyers bought American Screws at a price 15 per cent. higher than they could obtain in this country. Australian buyers are not usually built that way. However, this enterprising British firm of Screw manufacturers have not done so badly, the profit on their year's trading amounting to close on \$700,000.

Plows for Greece.

A notable feature of the Royal Agricultural Show, which was held this week in Cardiff, was the number of American and Canadian Agricultural Implement manufacturers who took space. Among the recent settlers in England engaged in the Agricultural Implement trade may be mentioned Frost & Wood of Smith's Falls, Ontario. This firm have only quite recently been selling Agricultural Implements in England, but they have been so much encouraged that they are now putting in their own stock and maintaining their own offices in London. One reason why American firms are coming to London is the growing demand in Eastern Europe for Agricultural Implements. There are a few manufacturers who make good Implements in Austria, but Russia, Greece, Turkey, and even further east, are all in the way of largely increasing their purchases of these goods. For example, among farmers in Thessaly, the spread of modern Agricultural Tools and Implements is very striking. According to statistics prepared by the Chamber of Commerce at Volo, it is stated that there are 8482 Plows of modern European construction in use throughout the province of Thessaly, but there are also 14,175 Plows of antique construction still in use. At Volo itself these older patterns are still made and many are exported to Salonica for the use of the Macedonian peasants. As the Mediterranean trade is now opened to New York, American makers should look into this.

Wanted, a Can Opener.

A gentleman representing a large firm of Canadian canners called here the other day in search of a Can Opener which would retail on this market at 6 pence (12 American cents). It will be necessary to stamp upon the Can Opener the name of the Canadian firm, and if

a suitable article be obtained, my visitor assures me that he will have no difficulty in placing many gross upon the English market.

HARDWARE FOR INDIA.

A LETTER FROM A PROMINENT BOMBAY HOUSE.

THE two principal shipping ports of British India are Bombay and Calcutta, and although the conditions prevailing in both are similar, the following remarks apply more particularly to Bombay, which is better known to the writer. There is a fair demand in India for Hardware of all kinds, and for such articles as Wrought Iron Tubes, Nails, Screws, Stone Breaking Hammers, Picks, Copper, Brass and Yellow Metal Sheets, Tubes, &c., the consumption might be called large.

HOW ORDERS ARE OBTAINED.

Orders for these articles are usually collected from native dealers in the bazars by European and native merchants and forwarded to their London agents. Most of these orders have a price limit, and the majority have stipulations as regards time of shipment, packing, &c., which it is not always easy to comply with, and the non-observance of any of which frequently gives rise to trouble on the arrival of the goods, especially when the market has gone against the native dealer meanwhile.

HEADQUARTERS IN LONDON; BRANCHES IN INDIA.

The majority of the East India merchants in London have branches of their firms or representatives in India, and business usually goes much more smoothly through their medium than when carried on directly between the manufacturer abroad and the native dealer in India.

LOWER QUALITIES; CHEAPER RATES OBTAINED FROM CONTINENTAL EUROPE.

The chief consideration with the native dealer is price, and it is due to the lower qualities and cheaper rates obtainable on the Continent of Europe that such a large share of the Indian Hardware business has been withdrawn from British manufacturers in recent years.

ENGLISH COMMERCIAL LANGUAGE OF INDIA.

Indian ports are open to the world and manufacturers from all parts of Europe and America compete for the business doing on equal terms. The commercial language of the country being English, American makers are placed at a distinct advantage compared with their competitors from Continental Europe. In the Hardware trade illustrated catalogues and descriptive matter are indispensable, and in India American makers will find a large field in which their tongue is known and understood, prepared for them by the mother country, and British merchants who, being unable to place business in their own country would rather see it go to America than elsewhere.

TRANSPORTATION FACILITIES AGAINST AMERICA.

There is, however, one serious drawback to trade between India and America, and that is distance, and distance aggravated by an irregular and somewhat slow and indirect steamship service. For this the existing steamship line is not altogether to blame, as steamers must wait for cargoes, and when sufficient cargo does not offer to send a ship full to one port it must needs take cargo for small ports on the way. All this means delay, and it is nothing uncommon for a steamer to take two months from New York to Bombay, and this, added to a delay of two or three weeks at the berth in America, makes a slow passage.

Goods ordered from America by mail might reach Bombay four months later, but it would hardly be safe to reckon on delivery certain in less than five or six. An order sent at the same time to Britain or the Continent would be delivered in two to three months, owing to the steamers running direct to Bombay several times a month from such ports as Glasgow, Liverpool, Hull, Hamburg and Antwerp.

INDUCEMENT IN PRICE NECESSARY.

The result is that prices being about equal orders would naturally go to Europe, and only a distinct advantage in price would induce importers to order from America. American manufacturers should take this into

account when competing for business in the Indian markets, and before sending quotations by wire or mail they should satisfy themselves that such rates will compare favorably with those obtainable in Europe. Money is often thrown away in wiring quotations, which may be low at the time in America, but which cannot compete with those current in Europe at the time.

EXPORT NOTES.

German Wire Tacks.

The following advices are from Simon W. Hanauer, Deputy Consul-General at Frankfort-on-Main, Germany:

Wire Tacks are made in Germany in large quantities and sold to other countries. During the first quarter of this year German exports of Wire Tacks amounted to 12,230 metric tons (26,954,920 pounds avoirdupois), valued at 2,568,000 marks (about \$600,000). Of this amount 36 per cent. were taken by England, 9.7 per cent. by Australia, 7.8 per cent. by Japan; British East Indies took 5½ per cent., China 4.9 per cent., Turkey (in Europe) and Egypt took about 4¼ per cent. each, Russia 3.3 per cent., Argentina and Denmark 2½ and 2 per cent. respectively.

These export percentage figures are rather tedious, but valuable to our exporters, showing them the principal selling markets of which our manufacturers should take possession.

Sale of Watches in English Market.

R. H. Ingersoll & Bro., 163-165 Washington street, New York, have just received cable advices from the senior partner, now abroad, of the closing of a contract with Symonds' London Stores, London, England, for 1,000,000 watches of the character of their Yankee \$1 watch. The significance of this transaction is largely in the fact that owing to the progress in watch making in the United States of serviceable watches by automatic machinery in immense quantities at correspondingly low prices has enabled them to wrest the trade from manufacturers in Switzerland, Germany and France, who have heretofore monopolized it.

PAN-AMERICAN EXHIBITS.

AMONG the exhibits at the Pan-American Exposition at Buffalo in Hardware and related lines are the following:

WITTINGTON & COOLEY MFG. COMPANY, Jackson, Mich., who have a booth in the agricultural division of the Stadium.

F. E. MYERS & BRO., Ashland, Ohio, and **BUCHER & GIBBS PLOW COMPANY**, Canton, Ohio, make a joint exhibit in the agricultural machinery department of the Stadium.

SMITH & HEMENWAY COMPANY, and **UTICA DROP FORGE & TOOL COMPANY**, 296 Broadway, New York, have an exhibit in Section S, Electricity Building.

ATLAS PIPE WRENCH COMPANY, 121 Liberty street, New York, and **Flood Building**, San Francisco, Cal., are located in section 34, Machinery Building.

E. C. ATKINS & Co., Indianapolis, Ind., have a large and striking exhibit of their Saws. The space occupied is 30 feet long by 15 feet deep.

PETERS CARTRIDGE COMPANY, Cincinnati, Ohio, make an interesting and instructive exhibit of their Ammunition for rifle, revolver and gun.

THE L. S. STARRETT COMPANY, Athol, Mass., are exhibiting their fine Mechanics' Tools in block 37, Machinery Building.

ERICSSON TELEPHONE COMPANY, 296 Broadway, New York, show a 50-subscriber switchboard and a few of their different Telephones, in section S, Electricity Building.

STUDEBAKER BROS. MFG. COMPANY, South Bend, Ind., have four exhibits, two in the Ordnance Building, one in the Stadium, and one in the Transportation Building.

Kenyon Reynolds has sold out his Hardware business in Rockford, Ill.

AMONG THE HARDWARE TRADE.

Woods & Boyle have succeeded Chevis & Woods in the Hardware, Stove, Agricultural Implement, Sporting Goods, Harness and Buggy business in Holton, Kan.

Henricks & Neher have lately opened up a new stock of Hardware and Vehicles in Guthrie, O. T.

Alex. Guilliland has disposed of his interest in the firm of **W. H. Hope & Co.**, Lowell, Mass., to **A. L. Hope**. The business will be continued without change in style.

Bonsall & Ruthrauff have succeeded Huffman & Bonsall in the Hardware and Farm Implement business in South Haven, Kan. The sale of coal has been added.

William O'Briant of Dublin, Texas, has bought out the Shelf Hardware, Tinware and Stove stock of **J. F. Miller**, Walnut Springs, Texas, and will continue at the old stand.

Benjamin Quillman, Hardware merchant, Norristown, Pa., has recently completed extensive improvements in his establishment by which his facilities for carrying on business have been materially enlarged. Mr. Quillman now occupies about 18,000 square feet of floor space.

Stannus & Olcott have succeeded **L. Stannus** in the wholesale and retail Hardware and Mining Supply business in Orotino, Idaho.

Bantley Bros., Lebanon, Mo., have disposed of a half interest in their Hardware business, and the firm style is now **Bantley Bros. & Fulbright**.

W. J. Gallup and **Geo. Bowers**, under the firm name of **Gallup & Bowers**, have lately entered the Hardware business in Sparta, Minn. Besides a line of Shelf Hardware they are carrying Stoves, Harness, Sporting Goods, Mining and Lumbering Supplies, Paints, Oils, &c.

A. E. Kopp & Co., Harveysville, Kan., have succeeded **McMillan & King**. The new firm have increased the capacity of the store by putting in new shelving.

The St. John Company are successors to the Hardware business formerly carried on by **Monroe Hooper** in Frederick, Kan.

Thos. C. Morris has succeeded to the feed business formerly conducted by the late **J. R. Acker** at Wheeling, W. Va., for a period of 40 years. In addition Mr. Morris is also handling Hardware and House Furnishing Goods.

Wood & Ray, Hardware, Stove and Agricultural Implement merchants, Tyler, Texas, have dissolved by mutual consent. Mr. Ray retiring. **G. B. Wood** continues under his own name.

S. M. Davis has lately succeeded **McBride & McIntosh**, dealers in Hardware, Stoves, Tinware, Paints, Oils, &c., Covina, Cal.

Bering-Cortes Hardware Company, Houston, Texas, are now operating under charter as a corporation. There has been no change in the management or policy of the business.

EDGAR C. NEAL, who for 24 years has been identified with **Weed & Co.**, Buffalo, N. Y., and for many years head of their Jobbing department, has severed his connection with that house and established himself in business with an office in the Chapin Building in that city. It is his intention to represent several well known manufacturers as well as jobbing interests, and he expects to be able to furnish his customers with anything needed in the way of Machinery and Hardware. He has already concluded arrangements to represent the **W. Birmingham Company**, and **Lake Erie Bolt & Iron Company**, both of Cleveland, Ohio.

Trade Winning Methods.

GUESSING AMOUNT OF SALES.

The Geo. W. Peck Company of Bath, N. Y., celebrated the close of 25 years of business by a guessing contest as to the amount of their sales during that period and down to December 31, 1900. Four prizes were offered, the cash value of which was \$150. They included a Range for a married lady; a Buggy for a married man; a Sewing Machine for a single lady, and a Bicycle for a single man. The accompanying cut shows



Announcement of Guessing Contest.

in greatly reduced size the form of the circular announcing the guessing contest. Illustrations of the prizes offered were given on the other side.

As will be seen the business was established in 1875 at Savona, since which time the company have opened one store after another, until they now conduct six stores in as many places.

With a view to helping contestants, the circular supplied information as to the sales for the years 1875 and 1890.

CONDITIONS OF CONTEST

The first person in the different classes that guessed nearest to the total sales for 25 years in all the stores was entitled to the prize in his or her class.

Every person was entitled to one guess; every person balancing their account was entitled to another guess, and every purchase made entitled the person making it to another guess.

RESULT

The number of guesses made was about 18,000, varying from about \$500,000 to \$12,000,000. The actual amount of sales for the whole period was \$1,748,163.54, the sales for 1900 being \$160,787.92.

The contest was a decided success. It created more interest than the company had hoped for, and resulted in a good increase of business at the different stores.

GROWTH OF THE BUSINESS.

The following table shows the sales each year since the business was established:

Year.	Amount.	Year.	Amount.
1875	\$4,321.16	1888	\$63,915.49
1876	4,704.56	1889	79,857.69
1877	6,532.22	1890	86,321.98
1878	8,910.20	1891	114,723.90
1879	9,763.46	1892	124,639.89
1880	10,982.23	1893	144,761.17
1881	13,116.42	1894	106,741.92
1882	18,509.13	1895	111,929.00
1883	26,303.58	1896	103,236.19
1884	28,341.12	1897	95,933.49
1885	32,055.47	1898	140,534.43
1886	37,970.14	1899	166,860.62
1887	46,410.16	1900	160,787.92
Total			1,748,162.54

Total.....\$1,748,163.54

It is interesting to note that the company's business has grown from 1875 to the present time on the profits without the addition of outside capital. It is estimated also that about \$50,000 over and above all expenses and salaries has been drawn out. This is a striking illustration of what can be accomplished by industry and enterprise.

NEWSPAPER ADVERTISING.

The accompanying cuts are reproductions, reduced from $2\frac{3}{4} \times 4\frac{1}{2}$ inches, of advertisements used by the Phillip Gross Hardware Company of Milwaukee, Wis.

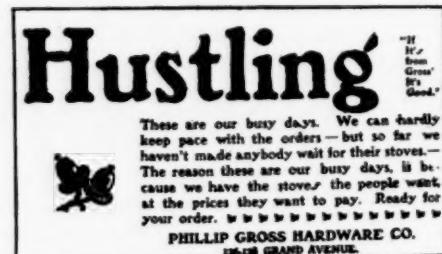


Fig. 1. - Stove Advertisement

They indicate the general style followed by the company. The scheme adopted in their advertisements, all of which occupy the same space, is bold and distinctive type, with a unique arrangement of reading matter, and devoted to one line of goods only. The catch phrase, "If it's from Gross' it's Good," always appears in their

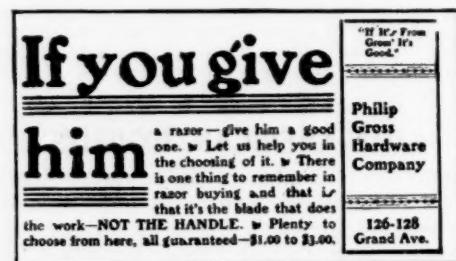


Fig. 2.—Holiday Advertisement.

advertisements, which have an originality of their own calculated to attract the attention of persons looking over the city's newspapers.

METHOD OF ADVERTISING.

In a recent issue we published an interesting account of the methods adopted by a Philadelphia house in bringing their goods to the attention of the public, and



we have no doubt that it was suggestive to the trade. We have received, however, the following letter, in which our correspondents suggest that too many articles are indicated in one of the advertisements, which for

facility in comparison we reproduce herewith. The comments of our correspondent are interesting: "I noticed the article in regard to the advertising methods of Kinkerter & Sheppard in your issue of December 27. I observed that in both of the advertisements given they call attention to too many articles. Our plan is to give a week to Refrigerators, using cut and explaining points in regard to their construction, &c. Next week we take Sickles, Lawn Mowers, Hose and Lawn Rakes, all going to keep a lawn in order. The following week might be devoted to Hammocks and Croquet Sets, but we would not illustrate 13 articles in one ad., and Lanterns are decidedly a fall article. We also notice a Razor as well as a Rule and Chisel.

"Now this is friendly criticism, and we believe that to take up one article with a good cut will do more good than to name a number of articles in one ad."

THE CRACKER OPENING.

The Wooster Hardware Company of Wooster, Ohio, had their fourth annual opening on April 4, 5 and 6, 1901. A novel and unusual name was chosen for the opening, which in itself was calculated to attract attention. Circulars of rough finished, cream tinted paper, $6\frac{1}{2} \times 12\frac{1}{2}$ inches in size, shown in reduced form in Fig. 1, were widely distributed. The aim of the com-

Our 4th Annual Grand Opening

The Cracker Opening

Of 1901, which takes place Thursday, Friday and Saturday,

April 4, 5 and 6.

Bring this Cracker and Envelope to us on either of the above dates and get the other end free. Hundreds will do so and we will be well repaid.

Bring in this cracker, we will give you a whip.
That will speed you along on many a trip.
Of buggies and surreys, we'll have a grand opening.
They'll be of your kind, we are earnestly hoping.
Of wagons and implements, we'll have plenty too.
And things for the farm, that will interest you.
When these you have seen, give your neighbor a tip
And send him to us, for a buggy and whip.

Bring Cracker with Envelope on April 4, 5 or 6.

At that time we will give our 4th Annual Grand Opening of Buggies, Farm Implements, Farm Wagons, Harness and General Hardware.

At this opening we will exhibit nearly 200 buggies, phaetons, etc. Ohio Hayloader, Bullseye Corn Planter, Oliver Plows, Osborne Binders and Mowers, Osborne Spring Tooth Harrows, Rakes and Tedders, Kraus Cultivators, Cogillard Wagons, Cyclone Pulverizer, Evans Potato Planter, new Michael Fanning Mill, Buckeye Drills, Gasoline Engines and the greatest variety of implements to be found under one roof.

We want you to see our magnificent stock.
We want you to get better acquainted with us.
We want you to know how we do business.
We want you to know it pays to be our customer.
We want you to advertise us.
We want you with us.
Please tell your neighbor if he failed to get a whip cracker and envelope like this to drop us a card for one before the opening.
Remember the dates.

Yours truly,

Wooster Hardware Co.
In the D. D. Miller Room.

P. S.—Do not forget that we sell Garden Seeds in bulk. They are fresh. They will grow. Our prices will please you.
W. H. CO.

Fig. 1.—The Cracker Opening Announcement.

pany was to send one to each taxpayer in their territory. Holes in the circular, not shown in the cut, permitted the use of a whip cracker which held the circular in envelope form, providing a place for the address and stamp, as shown in Fig. 2.

As will be noted by the announcement, Fig. 1, each

person bringing his envelope and cracker was entitled to receive a Whip. The Whips that were given away were ordinary Buggy Whips, 6 feet in length, such as usually retail at about 25 cents.

The most important feature of the scheme was recording the names and addresses of persons returning the circular and cracker, and obtaining information as to

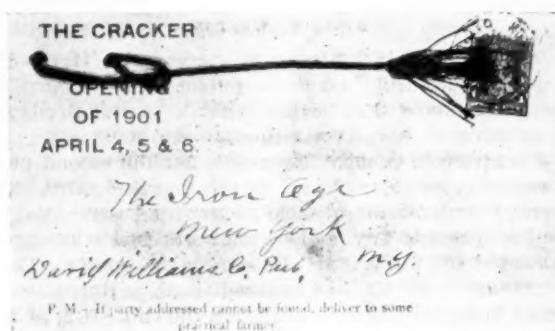


Fig. 2.—The Announcement Folded in Mailing Form.

their probable wants, and the wants of their neighbors for the season. The information thus obtained was written on blanks, one of which is shown in reduced size in Fig. 3.

These were afterward filed in alphabetical order for future reference, providing the company's canvassers with names of plenty of customers to visit, without driv-

Name _____	
P. O. _____	
WANTS	
NEIGHBOR'S	
Name _____	
P. O. _____	
WANTS	

Fig. 3.—Want Blank.

ing all over the territory to find some one wanting to buy something.

The goods to which particular attention is called in the circular include Buggies, Farm implements, Farm Wagons, Harness and General Hardware.

Thousands of people visited the store during the opening and the results of the three days' sales were most gratifying to the company.

REQUEST FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

Indiana Hardware Company, Indiana, Pa., who have recently commenced the wholesale and retail business, will be pleased to receive catalogues, price-lists, &c., from manufacturers.

SHOW WINDOW DISPLAY.

The trade are invited to contribute information in regard to methods which have proved satisfactory, with descriptions of attractive displays. Inquiries also are solicited, to which careful attention will be given.

HARDWARE STORE WINDOW DISPLAY.

BY G. T. WESTON.

To conduct his business to success the Hardwareman must, first, buy what the public wants; second, let the public know that he has what it wants; third, sell at an advance, and, everlastingly, keep at it.

Each step is equally important, but the second point is seldom studied as closely as the first and third. The average dealer will ransack heaven and earth to find the best place to buy, and he knows at just what figure he should sell a given article to get a fair profit. These points are more or less mathematical. But when it comes to actual selling—ah! there's the rub. It is at this point that ability tells and arithmetic is in vain.

LET THE PUBLIC KNOW.

The first step to this end is to let the public know that you have what it wants. It is with this phase of the campaign that this paper deals. You can arrive at the desired result in two ways—either by telling them by personal speech, letter, newspaper advertisement, floater, fence signs, “satisfied customer,” &c., or by showing them.

Say one person a minute passes your store 14 hours a day. This means that 5000 pass every week. If two or four or eight or more persons pass your store every minute the number per week is astonishing. To be sure, the same persons are apt to pass again and again. None the worse. Pour enough water on a cloth and, unless it is strictly water proof, the water will trickle through in time.

If the Hardwareman can so display his window as to attract the attention of a majority of this throng of passers by, and by his display remind them that he has something they want, or may want, and connect his name with the reminder, he will have sown exceedingly good seed. It has been my experience that otherwise up to date merchants pay too little attention to their window in comparison with other advertising, and I will attempt to show in as few words as possible that window advertising is worth while.

EMPHASIZE THE FIRM NAME.

First and foremost, identify the firm name with the window display. Your name is above the door, to be sure, but folks looking in at the window as they pass cannot look over the door at the same time. Have your name in a prominent place in the display, so that Mrs. Smith will not say “I saw a handsome Library Stove in a window on Washington street to-day,” but “I saw a handsome Library Stove in Thompson's window to-day.”

Before taking up concrete examples of window dressing there is another essential point to be considered—viz., what should be displayed in a window. There is a prevailing notion abroad that it is a waste of time and energy to

DISPLAY STAPLES.

Merchants are apt to argue “everybody knows that a Hardwareman keeps these things. What is the use of putting them in the window?” The answer is this: A good many Kitchen Ranges and Washtubs and Hammers and Hatchets and Dust Pans in general use are worn out, or nearly so, and if, as our friend Mrs. Smith passes your store the next time, she says to herself, “Um! I'll soon need another Washtub. I wonder how much that one costs in Thompson's window?” the display has not been made in vain. Another word: Don't trim your window exclusively for the benefit of the small boy. A crowd around a window is all right, as far as it goes. It attracts attention. When a window contains anything spectacular, have the line to which you wish

to call the public's attention high enough to be seen by the passers by over the gazers' heads.

THE CONSTRUCTION OF THE WINDOW.

In regard to the construction of the window, have a flat bottom painted black. Fitting over this have a false bottom of loose boards covered with black cloth. Take out all the lithograph advertisements of Threshing Machines and Fertilizers hanging on the sides. These only tend to distract attention from the window display proper. When you wish to advertise Fertilizer in your window make a display. It is impossible to advertise two unconnected lines in one window and do it well. Have the sides and ceiling of the window painted black. At the back of the window, half way up, have a brass rod and on this string a cloth of some quiet material that will not show dirt. The brass rod should be so arranged that it will bend out of its sockets.

All windows should be cleaned twice a week from the outside with dipper, pail and brush. The inside should be cleaned once a week with a chamois.

SUGGESTED SPRING AND SUMMER DISPLAYS.

Below are given some displays that are suggested for spring and summer:

I. FLOWER SEEDS AND GARDEN TOOLS.—Put a two-story row of empty nail kegs at the back of the window. On the top of these arrange a row of plants. Hire them from the greenhouse or send the boy to your house for them with a wheelbarrow. Before you send the boy explain to your wife what he is coming for. She will probably object at first, but perseverance means success. Slant loose boards from the top of the nail kegs to the front of the window. Cover the boards with green crépon paper. Decorate the flower pots with red crépon paper. Arrange papers of Garden Seeds in some artistic pattern all over the green board, leaving a blank aisle down the center of the incline. In this center aisle display Trowels and other small Garden Tools. Have the Seeds arranged quite solidly, but allow plenty of green paper to show between the tools. On the sides of the window hang Spades, Hoes and Rakes. Have your name lettered neatly on a long card and put the card somewhere up among the flowers.

II. WASHDAY ARTICLES.—Put your handsomest Kitchen Stove in the window. Open the front door of the Stove, put red tissue paper behind the grate and string an incandescent light inside. If this cannot be done put in a lighted candle. At this point the stove will glow in a manner most naturally. Put a Wash Boiler on top of the two front rounds and a couple of Sad Irons on the back. Have Stove Pipe connected to the Stove and elbowed up behind the top of the window. Place two Washtubs on a washbench and distribute two or three Buckets around. Put a Washboard in the Tubs. Lean a Clothes Horse against the side of the window. If you keep a store cat put him in the window to lie under the Stove. It will add to the attractiveness of the display. Show the name in a prominent place.

III. LAWN MATERIAL.—Get enough grass rugs to cover the bottom of window. Your photographer will lend them to you. If you have no photographer cover the floor of the window with green crépon paper. Then get some loose cut grass and scatter well around. Place a Lawn Mower at one end of the window and a reel of Garden Hose at the other. Have one end of the Hose attached to a sprinkler. Place a Wooden Rake in the center near a heap of grass and lean a Scythe against the side of the window. Also have a pair of Grass Shears and a Sickle on the scene, and a bag of Grass Seed if the season is timely. Your name, as usual, should be in a prominent place.

IV. DOG DAYS MATERIAL.—Cover the floor of the window with green crépon paper. Decorate an empty nail keg with red paper and place in central position. Place a large size Freezer on the keg. Place a semicircle of small Freezers back of the central figure. Hang a number of Window Screens on the side of the window. Fill in the background with Screen Doors. Hang a Thermometer in front of the nail keg and put an open bag of rock salt where it will easily be seen.

V. SAWS, AXES, &c.—Put a Saw Buck in the window and a good sized log on it. Have two or three pieces sawed off and lying by the side as if they had fallen there. Also get a heap of sawdust from a carpenter shop and place under the Buck in the proper place. Put a framed Wood Saw on the log or leaning against the Buck. At the other end of the window have a Chopping Block surrounded by a lot of chips. Place an Axe by the side of the Block. Put a piece of wood, like sample in Saw Buck, on the Chopping Block and stick a Hatchet in it. By the side of the window lean a number of Wood Saws and Axes. Name as usual.

POINTS ON ARRANGEMENT AND DISPLAY.

The above illustrations are enough to show the essential points of their particular system of window display. Have one prevailing idea to show. Then show it.

Do not cloud it with a lot of irreconcilables. Have the window arranged intelligently with articles that may suggest to the passers by that they are the very things they need or will need.

Remember that a quiet strain of humor is never out of place except at a funeral or when trying to collect an overdue account.

Have your name identified with the articles shown.

As to "smart" signs in windows. If you can get people to look in your window without the aid of a catchy sign so much the better. The public is more apt to remember the catchiness than your name. The only sign in your window should be the one bearing your name.

A little experimenting will bring about clearness on all obscure points.

Have each clerk try his hand at window arrangement in succession.

Saturday morning is the best time to trim a window.

A display should never, except under exceptional circumstances, stand more than a week.

When a particularly good display is shown prepare a news item about it and take it to the local papers where you advertise. They will be glad to print it.

PRICING GOODS IN WINDOWS

As a general rule price tags should not be attached to goods. It is more apt to lead to useless competition than to business. Robinson asks a customer \$4.50 for a Lawn Mower. "Oh! oh!" says the customer. "Thompson has one in his window just like that for \$3.50." It is useless for Robinson to try to explain that his \$4.50 machine is a better one than Thompson's \$3.50 Mower. He may even show the customer one for \$3. "Oh! oh!" says the customer to himself. "Just to think that Robinson here would have charged me \$4.50 if I had not seen that one in Thompson's window." Of course the customer is wrong, absolutely wrong. But he has made up his mind that Robinson's \$4.50 and Thompson's \$3.50 machines look a lot alike and therefore are alike, and my man will leave Robinson without making a purchase. Robinson gets mad. He puts a \$3 Mower in his window, marked \$3. Thompson hears of this, gets his blood up, and puts a similar Mower in his window marked \$2.75. Finally the price of the \$3 machine comes down to \$1.98, perhaps \$1.48. There is also the possibility of \$1.23, but this I prefer not to contemplate. Nothing has been gained and the trade has been hurt. Local dealers should come to some understanding about this price mark question, and the agreement should be that, as a general rule, price tags are not to be attached to goods displayed.

PREVENTING INJURY TO GOODS IN WINDOW.

Each merchant must decide for himself as to the advisability of displaying goods easily shop worn. It comes down to a cold question whether the damage is adequate to the return. In the summer a wire screen can be arranged at the back of the windows to keep out the flies. This should come down as far as the brass rod and be tacked to a light wooden frame. The curtain will serve the purpose below the rod, and the wire screen must be so arranged that the brass rod can easily be bent out of its sockets. There will then be no trouble in moving small things, and pretty large ones, too, out of

the window. The frame of the wire screen should be lightly tacked or screwed to the window casing, so that it can be removed in a minute when necessary. Some Hardwaremen use cloth mosquito netting, but this is inferior to wire netting. The best plan of all is to put fly proof articles in the window during fly time and dispense with screens entirely. It will be noted that none of the articles mentioned in the above examples can be damaged to any great extent by flies.

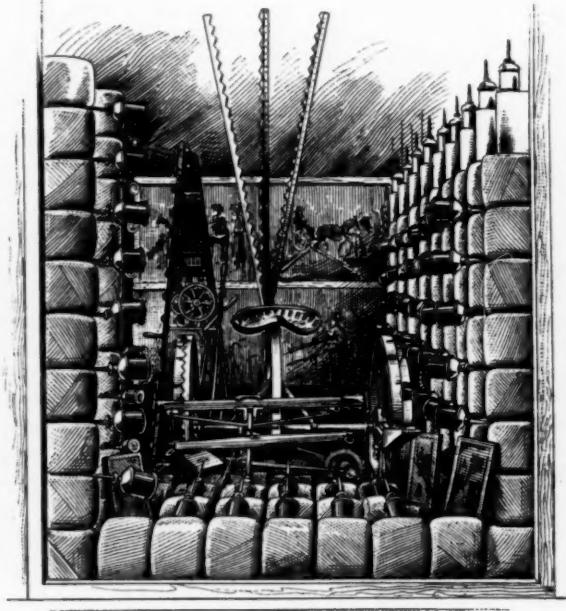
PRIZE WINDOW COMPETITION FOR CUSTOMERS.

Invite the general public to submit schemes for dressing your window. Name the articles you wish displayed. Offer three prizes for the best suggestions. These prizes can take the form of cash, merchandise or rebate on purchases. Advertise this offer by putting a large sign in your window. Have the sign as large as the window will permit. Send a neatly typewritten mimeograph letter to your customers and prospective customers. Advertise the scheme generously in your local papers. Have reading notices in these same papers. Create interest in the contest. This can easily be done if the prizes are worth while. The prizes should be worth while, as it is as good an advertising investment as you can make. Have the three winning displays in your window in succession, each standing a week. Put a small card somewhere in each of these displays stating the winner's name. Also have a reading notice in your newspapers to the same effect. Thus at one stroke you will have received a wonderful lot of good, healthy, first-rate advertising, and will have taught the public to look in your window as it passes by. The above outlined plan applies more particularly to the small towns, although a modification of the above can easily be worked out for the larger cities.

A HARVESTING DISPLAY.

One of the show windows of the store of Samuel Emert, Hagerstown, Md., contains a timely and attractive display of a Reaper, Binder Twine and Oil Cans. This exhibit, which is the work of Charles J. Powles, one of the clerks in the store, is shown in the illustration.

As will be seen, the right wall and floor of the window is entirely covered with balls of Binder Twine,



A Harvesting Display.

while on the left side are erected two columns of these balls. Between each ball is stuck a red Oil Can. In the center of the window is a Reaper, which is painted blue. On the back wall are hung posters of brilliant colors advertising Reapers.

This display is said to be very effective, special mention being made of the harmonious coloring.

PRICE-LISTS, CIRCULARS, &c.

HOLLANDS MFG. COMPANY, Erie, Pa.: Comprehensive illustrated catalogue of Planer Chucks, Vises in a great variety of styles and sizes for diverse uses, Pipe Tongs, Pipe Wrenches, Pipe Cutters, Pipe Stocks and Dies, Hose Reels, Emery Wheel Dressers and a number of other specialties.

UNITED STATES EDGE TOOL COMPANY, Cattaraugus, N. Y.: Supplementary illustrated catalogue of 30 pages showing a variety of Axes for chopping wood, ice and other commodities.

THOMAS J. LEARY, 89 Chambers street, New York, importer and manufacturers' agent and sales agent of F. Dumoulin & Co., Liège, Belgium: Illustrated descriptive catalogue of the leading Shot Guns and Rifles which he is carrying in stock for the season of 1901.

INDIANAPOLIS BRUSH & BROOM MFG. COMPANY, 26 Brush street, Indianapolis, Ind.: Illustrated descriptive catalogue A of various kinds of Brooms and Brushes used by manufacturing industries, especially for mill, factory and railroad trade.

GOSHEN MFG. COMPANY, Goshen, Ind.: Illustrated catalogue of various kinds of Step Ladders, Single and Extension Ladders, Painters' Trestles, &c. This company also make Lawn Swings, Hay Slings and Fire Ladders.

MERIDEN CUTLERY COMPANY, Meriden, Conn., and 80 Chambers street, New York: Illustrated booklet showing various examples and styles of fine Table Cutlery mounted in pearl, celluloid, stag, &c.; attention is also drawn to the attractive way carving sets and similar goods are put up, making them suitable for wedding and other presents.

THE MALIN & CO., Cleveland, Ohio: Catalogue of Spooled Wire, together with price-list of Malin's Composition Wire Belt Lacing and Tools and circular of Insulated Wire on Spools.

TRADE ITEMS.

CLARK, QUIEN & MORSE, Peoria, Ill., wholesale Hardware dealers and manufacturers of Eave Trough, Elbows, Washing Machines, Plecker's Corrugated Conductor Pipe, &c., have increased their capital stock to \$100,000 from \$75,000.

JOHN A. GREGG, Burlington, Iowa, representing manufacturers to the jobbing trade, has issued a book embodying admirable features. Representing quite a number of establishments manufacturing a great variety of articles, he has given under each company's name a list of the products which they turn out. This will prove a great convenience for both buyers and stock clerks. The book contains a blank page for memoranda opposite each printed page. The products handled by Mr. Gregg comprise a good part of the regular Hardware line.

PHENIX HORSE SHOE COMPANY, Joliet, Ill., request the trade hereafter to address all orders and correspondence to their office, Rookery Building, Chicago, Ill.

JOHN WALDO CRADDOCK, widely known in the South from his connection with Manogue-Pigeon Iron Company, Memphis, Tenn., has identified himself with Neal & Brinker, 18 Warren street, New York, and is now visiting the trade in their behalf. His friends will wish him success in this new departure.

THE AMERICAN SAW COMPANY, Trenton, N. J., have disposed of their Saw and Saw Tooth business to Henry Disston & Sons, Philadelphia, who are prepared to furnish Teeth and Saws of all the different sizes and patterns, and to whom orders and inquiries should be addressed.

MISCELLANEOUS NOTE.

Galvanized Steel Pump Tubing, &c

Cleveland Galvanizing Works, Cleveland, Ohio, are now prepared to furnish a line of galvanized steel pump tubing and galvanized iron curbs in connection with their pump chain and rubber buckets. They refer to the curbing as thoroughly galvanized throughout, making it absolutely rust proof. The tubing is also guaranteed not to rust.

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Cork, Asbestos and Gravel Ready Roofing.

Stowell Mfg. Company, 114-134 Culver avenue, Jersey City, N. J., are making several kinds of ready roofings, which are variously covered with cork, asbestos and gravel, according to the requirements of the market or buyer. The cork covered roofing is shown in the accom-



Cork Coated Ready Roofing.

panying illustrations. Fig. 1 is a sectional view indicating it as it is put together, after which it is compressed between heavy rollers to a thickness of but little over $\frac{1}{8}$ inch. Fig. 2 reproduces a surface section with the granulated cork, actual size.

Aside from the top layer the materials and method of assembling the different roofings are identical, there being two thicknesses of extra heavy wool felt saturated with asphalt instead of coal tar. The coatings of asphalt cement the two layers of felt and hold on the top layer.

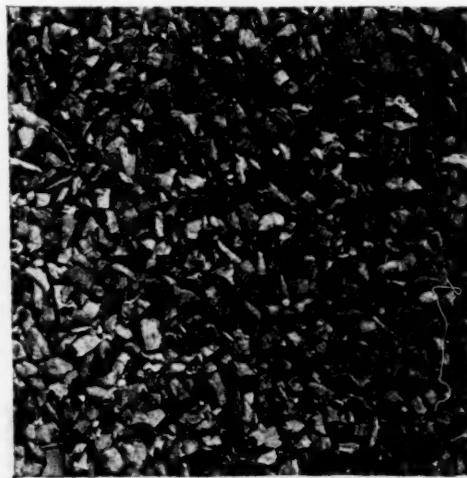


Fig. 2.—Ready Roofing Covered with Granulated Cork.

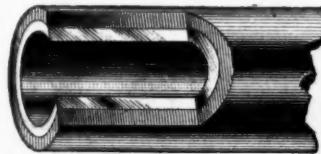
One of the newer roofings has a top dressing of granulated cork, which is put on while the asphalt is at a proper heat and run between rollers, which securely imbed it in the material. This roofing is elastic, non-absorbent, a nonconductor of heat and will not burn. This roofing is especially recommended by the manufacturers for export, particularly to hot countries, because of its lesser weight, important on account of freight, and also because of the cooler interior where a building is so covered. Another ready roofing new to the trade is the same as that described above, except that the top coating is asbestos, an indestructible and fire proof material. There is little difference in weight between the cork and asbestos roofing in a roofer's square (100 square feet).

Another roofing long made by this firm is covered with gravel of various degrees of fineness, the average of the latter being about 50 pounds heavier in a roll of

turned at their expense. Samples can be obtained from the main office of the company or of their foreign representative, 37 St. Mary Axe, London, E. C., England.

Tin Lined and Lead Lined Iron Pipe.

Lamb & Ritchie, Cambridgeport, Mass., are offering tin lined iron pipe, as shown in the accompanying illustration. The L. & R. pipe, as it is called by the manufacturers, is made by pouring melted tin into wrought iron pipe. While melted the tin, it is explained, is inseparably united and formed into a substantial inner pipe, resulting in one solid pipe of two metals which cannot be torn apart. Lead lined pipe is made in the



Tin Lined Iron Pipe.

same way. The lining, it is remarked, cannot be separated from the iron even when bent or coiled. The composite pipe is designed to be successfully used where tin, lead, brass or iron pipes alone are too expensive or unsatisfactory. It is pointed out that the tin lined pipe insures pure water and that it combines with this merit all the strength of wrought iron pipe, and actually increases its strength. It is shown that it is essentially different from iron pipe dipped in tin, or iron pipe lined with a separate tin pipe which will become detached. Fittings are lined with tin to match the pipe. It is stated that hot water will not injure the pipe, that rats will not gnaw it and that thieves will not cut it out. For ornamental finish the pipe may be nickel plated.

Protector Woven Steel Covered Hose.

The National Supply Company, 5 and 7 West Lombard street, Baltimore, Md., whose New York agents are Alerton-Clarke Company, 97 Chambers street, have just put on the market the Protector woven steel covered hose, as here illustrated. The galvanized spring steel covering, which permits the hose to be coiled for shipping or putting away in small compass after use, also makes it especially desirable for air, steam or water high pressures, the manufacturer guaranteeing it up to 1000 pounds pressure to the square inch for garden hose. The spring steel covering is tightly braided upon the hose by special machinery, a point being made by the manufacturers that the thin metal strips thoroughly galvanized are closely woven with a snug, even pressure from every point, instead of being pulled over the hose, which, with round wires, sometimes cuts the outer covering. This method of protection gives an even outer surface, so that it can be drawn over lawns or such rough surfaces as in quarries, shipyards, boiler shops, &c., for a variety of purposes. They particularly recommend it for pneumatic tools and all uses demanding conduits capable of resisting continued pressures of great force. If the strips were deliberately cut at a given point the



Protector Woven Steel Covered Hose.

100 square feet. The gravel and cork coated roofings are about the same price, the asbestos roofing being somewhat higher. All their roofings are guaranteed to be made from the natural Trinidad asphalt, saturated felt and coated with pure Trinidad asphalt only. They will cheerfully ship on approval with the distinct understanding that if after the severest comparison it is not found to be of the highest grade the goods may be re-

next meeting point of the strips would prevent any release unless every intersection was cut, which is a great advantage. It is extremely flexible and can be tied in a comparatively small knot without kinking. The $\frac{1}{2}$ and $\frac{3}{4}$ inch hose for air or steam is guaranteed by the makers to stand an air or hydraulic pressure of 2000 pounds to the square inch. The 1-inch diameter will stand 1500 pounds to the square inch without bursting, it is said, these

statements applying to four-ply hose. Three ply will stand 25 per cent. less and five-ply 20 per cent. more. This style of hose is made in $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2, $2\frac{1}{4}$ and $2\frac{1}{2}$ inch

produced. The tubular wick, the burner being of the central draft order, is slipped into a cylinder of perforated brass, the inner gear wheel fitting into the perfora-



Patent Screw for Shear and Scissor Blades.

sizes, the company now building machines for weaving hose up to 5 inches diameter.

tions no matter how the cylinder is put in and lifting or depressing the wick so that a steady, uniform flame is

Patent Screw for Shear and Scissor Blades.

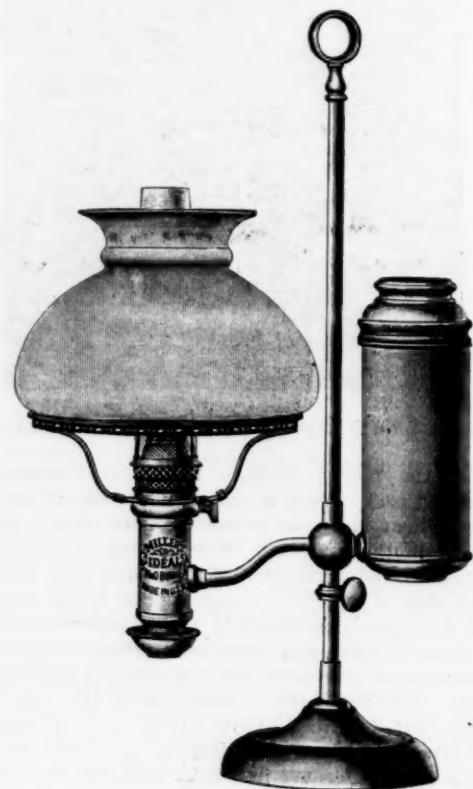
The accompanying cut represents 8-inch straight trimmer fitted with a patent screw. The goods are manufactured by the Geneva Shears Company, Geneva, N. Y., the control of whose product has recently been taken over by the Smith & Hemenway Company, 296 Broadway. The screw D consists of one cone bearing, a square shank and the threaded part of the screw. The other cone, C, has a square aperture made to fit closely onto the square part of the screw, and is held in place by the adjusting nut A, with spring washer B between the two. The company state that all their shears are steel laid with Wardlow's best English shear steel. Especial care, it is explained, is taken in hardening and tempering to secure a good, even cutting and wearing edge. The line of goods include straight and bent trimmers, barbers' shears, left hand straight trimmers, ladies', pocket and button hole scissors, bankers' or paper hangers' shears, &c.

The Colonial Bent Trimmer.

The trimmer herewith illustrated is offered by the Acme Shear Company, Bridgeport, Conn. The lip on the finger bow is the particularly new feature. This fits the hand, it is explained, and makes the cutting of heavy goods far easier than with the old style of bow. The trimmers are referred to as being made from stock especially selected for this class of goods, and as being strong and reliable and highly finished to meet with ready sale.

Miller Ideal Student Lamp.

Edward Miller & Co., Meriden, Conn., and 28-30 West Broadway, New York, have just put on the market the



Miller Ideal Student Lamp..

obtained. The advantage of this lamp is that there is little heat, no shadow and oil always level with the



The Colonial Bent Trimmer.

Miller Ideal student lamp, as here shown. The novelty of this lamp is in the greatly improved form of wicking device, by means of which a positive and even action is

burner, which insures a better illumination. They are made in three sizes, in both single and double styles, and they can be furnished in either brass or nickel plate.

Current Hardware Prices.

REVISED JULY 9, 1901.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus $33\frac{1}{3}@\$33\frac{1}{3}$ & 10% signifies that the price of the goods in question ranges from $33\frac{1}{3}$ per cent. discount to $33\frac{1}{3}$ and 10 per cent. discount.

Adjusters, Blind-

Domestic, per doz. \$3.00... $33\frac{1}{3}@\$33\frac{1}{3}$ & 10%
North's... $33\frac{1}{3}@\$33\frac{1}{3}$ & 10%

Himmerman's—See Fasteners, Blind.

Window Stop-

Patent... $25\frac{1}{2}@\$25\frac{1}{2}$
Caplin's Perfection... $30\frac{1}{2}@\$30\frac{1}{2}$

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—American

Table Anvils,... $\frac{1}{2}\text{d} 7\frac{1}{2}@\$7\frac{1}{2}$
Hay-Budden, Wrought... $30\frac{1}{2}@\$30\frac{1}{2}$

Horseshoe brand, Wrought... $9\frac{1}{2}@\$9\frac{1}{2}$

Jackson... $9\frac{1}{2}@\$9\frac{1}{2}$

Trenton, Wrought... $\frac{1}{2}\text{d} 8\frac{1}{2}@\$8\frac{1}{2}$

Peter Wright's... $9\frac{1}{2}@\$9\frac{1}{2}$

Anvil, Vise and Drill—

Miller Falls Co., \$18.00... $20\frac{1}{2}@\$20\frac{1}{2}$

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Bull Bros. Co.:
Lots of 1 doz.... $25\frac{1}{2}@\$25\frac{1}{2}$
Smaller Lots.... $20\frac{1}{2}@\$20\frac{1}{2}$
Lots of 3 doz.... $30\frac{1}{2}@\$30\frac{1}{2}$

Augers and Bits—

Tom, Double Spur... $70@\dots$
Boring Machine Augers... $60\frac{1}{2}@\text{doz}@\$70\frac{1}{2}$

Bar Bits, 12-in. twist... $60@\$60\frac{1}{2}$

Jennings' Pattern... $40\frac{1}{2}@\text{doz}$

Auger Bits... $50\frac{1}{2}@\text{doz}@\$50\frac{1}{2}$

Lord's Auger and Car Bits... $40\frac{1}{2}@\text{doz}$

Constrat Pat. Auger Bits... $25\frac{1}{2}@\text{doz}$

E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list... $40\frac{1}{2}@\text{doz}$

No. 30, R. Jennings' list... $50\frac{1}{2}@\text{doz}$

Messell Jennings'... $35\frac{1}{2}@\text{doz}$

Hommelieu Car Bits 5&10@ $\frac{1}{2}@\text{doz}$

Saybey's Countersink Bits... $45\frac{1}{2}@\text{doz}$

Saybey's Black... $20\frac{1}{2}@\text{doz}$

Uggh's Jennings' Pattern... $35\frac{1}{2}@\text{doz}$

Neill's Auger Bits... $60\frac{1}{2}@\text{doz}$

Neill's Bell Hangers... $50\frac{1}{2}@\text{doz}$

Neill's Car Bits, 12-in. twist... $60\frac{1}{2}@\text{doz}$

Wright's Jennings' Bits (R. Jennings' list)... $50\frac{1}{2}@\text{doz}$

Bit Stock Drills—

Standard List... $65@\$65\frac{1}{2}$

Expansive Bits—

Mark's small, \$15; large, \$26... $50\frac{1}{2}@\text{doz}$

Avigno's Clark's Pattern, No. 1, \$9

doz.; No. 2, \$18... $50\frac{1}{2}@\text{doz}$

E. Jennings & Co., Steer's Pat... $35\frac{1}{2}@\text{doz}$

Wan's... $65\frac{1}{2}@\text{doz}$

Gimlet Bits—

Common Double Cut...gro. \$2.25@ $2\frac{1}{2}$

German Pattern...gro. \$3.25@ $4\frac{1}{2}$

Double Cut, makers' lists... $50\frac{1}{2}@\text{doz}$

Wright's... $50\frac{1}{2}@\text{doz}$

Hollow Augers—

Conney Pattern, per doz. \$11.00@ $11\frac{1}{2}$

mes... $25\frac{1}{2}@\text{doz}$

High Patent... $25\frac{1}{2}@\text{doz}$

Universal... $20\frac{1}{2}@\text{doz}$

Ford's Universal... $25\frac{1}{2}@\text{doz}$

Ship Augers and Bits—

Lord's... $40\frac{1}{2}@\text{doz}$

Neill's... $40\frac{1}{2}@\text{doz}$

E. Jennings & Co.:
Hommeau's... $15\frac{1}{2}@\text{doz}$

Watrous'... $40\frac{1}{2}@\text{doz}$

Awl Hafts, See Hafts, Awl.**Awls—**

Handled...gro. \$2.75@ $3\frac{1}{2}$

Unhandled, Shouldered, gro. \$3@ $6\frac{1}{2}$

Unhandled, Patent...gro. \$6@ $7\frac{1}{2}$

eg Awls:

Handled, Patent...gro. \$1@ $3\frac{1}{2}$

Unhandled, Shouldered, gro. \$6@ $7\frac{1}{2}$

Scratch Awls:

Handled, Common...gro. \$3.50@ $4\frac{1}{2}$

Handled, Socket...gro. \$11.50@ $12\frac{1}{2}$

Awl and Tool Sets—See Sets, Awl and Tool.**Axes—**

First Quality, best brands, \$5.50@ $5\frac{1}{2}$

First Quality, other brands, \$2.50@ $5\frac{1}{2}$

Jobbers' Special Brands:

Good Quality... $4.00@\$4.00$

Best Quality... $5.75@\$5.75$

Heavy, Handled Axes... $5.50@\$5.75$

Kevelled, add 5% doz.

Axle Grease—See Grease, Axle.

Extra Heavy, Short Lap... $50\frac{1}{2}@\text{doz}$

Axes—

Iron or Steel
Concord, Loose Collar... $4\frac{1}{2}@\text{doz}$

Concord, Solid Collar... $4\frac{1}{2}@\text{doz}$

No. 1 Common... $3\frac{1}{2}@\text{doz}$

No. 1½ Com. New Style... $3\frac{1}{2}@\text{doz}$

No. 2 Solid Collar... $4\frac{1}{2}@\text{doz}$

Nos. 11 to 14... $70@70\frac{1}{2}$

Nos. 15 to 18... $75@75\frac{1}{2}$

Nos. 19 to 22... $75@75\frac{1}{2}$

Each 10 doz

Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx B. & H. Co.:
Durable Brand

Per Doz. ... $60\frac{1}{2}@\text{doz}$

Per Doz. ... $65\frac{1}{2}@\text{doz}$

Cartridges—

Blank Cartridges:
 \$2 C. F., \$5.50 10d⁵ @ 10d¹⁰
 \$3 C. F., \$7.00 10d⁵ @ 10d¹⁰
 22 cal. Rim, \$1.50 10d⁵ @ 10d¹⁰
 32 cal. Rim, \$2.75 10d⁵ @ 10d¹⁰
B. B. Caps. Con., Ball Swgd, \$1.80 @ 1.85
B. B. Caps. Round Ball \$1.10 @ 1.15
Central Fire 25@2.5%
Pistol and Rifle 15d⁵ @ 15d¹⁰
Primed Snells and Bullets 15d⁵ @ 15d¹⁰
Rim Fire Sporting 50@50d⁵
Rim Fire, Military 15d⁵ @ 15d¹⁰

Casters—

Bed 70@70d¹⁰
 Plate 75@75d¹⁰
 Philadelphia 75@75d¹⁰
 Boss 70d¹⁰
 Boss Anti-Friction 70d¹⁰
 Martin's Patent (Phoenix) 45⁵
 Payson's Anti-Friction 70d¹⁰ & 10d¹⁰
 Standard Ball Bearing 45⁵
 Tucker's Patent, low list 30⁵

Cattle Leaders—

See Lenders, Cattle.
Chain, Coil—

NOTE.—The following prices are f. o. b. Pittsburgh. Manufacturers in quoting u will add freight to destination.
American Coil, Cask lots:
 3.16 5-16 36 7-16 16 9-16
 7.45 5.55 4.55 5.70 3.55 3.45 3.40
 4m 3/4 3/4 to 1 1/8 to 1/4 inch
 3.60 3.35 3.35c per lb. 3.00 per 100 lb.
 Less than Cask lots add 25c.

German Coil, list July 2nd, 97.60 & 10d¹⁰

Halters and Ties—
 Halter Chains 50d¹⁰
 German Halter Chain, list July 2nd, 97.60 & 10d¹⁰

Cow Ties 50d¹⁰

Trace, Wagon, &c.—
 Traces, Western Standard: 100 pair
 1/2-6-3, Straight, with ring \$30.00
 1/2-6-2, Straight, with ring \$31.00
 1/2-8-2, Straight, with ring \$35.00
 1/2-10-2, Straight, with ring \$38.00
 Add 2¢ per pair for Hooks.
 Twisted Traces 2¢ per pair higher than
 Straight Link.

Trace, Wagon and Fancy Chains. 50&10@50d¹⁰&10%

Miscellaneous—
 Jack Chain, list July 10, '95:
 Iron 80@80d¹⁰
 Brass 80@80d¹⁰

Safety Chain 70d⁵ @ 70d¹⁰

Gal. Pump Chain 1b. 1/4@4/4c

Covert Mfg. Co.:
 Breast 35.25⁵
 Halter 35.25⁵
 Heel 35.25⁵
 Klein 35.25⁵
 Stallion 35.25⁵

Covert Sad. Works:
 Breast 70⁵
 Halter 70⁵
 Hold Back 70⁵
 Rein 70⁵

Omelia Community:
 Am. Coll and Halters 50d¹⁰ & 80d¹⁰

Am. Cow Ties 35d⁵ @ 40d¹⁰

Eureka Coll and Halter 60@60d¹⁰

Niagara Coll and Halter 60@60d¹⁰

Niagara Cow Ties 48&50d⁵ & 10d¹⁰

W. G. Goods Co.:
 Dog Chain 60&10⁵

Universal Dbl-Jointed Chain 50⁵

Chalk—(From Jobbers):
 Carpenters' Blue gro. 12@45c
 Carpenters' Red gro. 37@40c
 Carpenters' White gro. 33@35c

See also Crayons.

Chalk Lines—See Lines.

Checks, Door—

Bardsey's 40&10⁵
 Columbia 50&10⁵
 Eclipse 50@60&10⁵

Chests Tool—

American Tool Chest Co.:
 Boys' Chests, with Tools 35⁵

Youths' Chests, with Tools 40⁵

Gentlemen's Chests, with Tools 30⁵

Farmers' Carpenters', etc., Chests, with Tools 30⁵

Machinists' and Pipe Fitters' Chests, Empty 30⁵

C. E. Jennings & Co.'s Machinists' Tool Chests 30⁵

Chisels—

Socket Framing and Firmer Standard List 70d⁵ @ 70d¹⁰

Buck Bros. 30⁵

Charles Buck 30⁵

C. E. Jennings & Co. Socket Firmer No. 10 60&10⁵

C. E. Jennings & Co. Socket Framing No. 15 60&10⁵

Swan's 70&5⁵

L. & J. White 50@60&5⁵

Tanged—

Tanged Firmer 50d⁵ @ 50d¹⁰

Buck Bros. 30⁵

Charles Buck 30⁵

C. E. Jennings & Co. Nos. 191, 181, 25⁵

L. & J. White, Tanged 25&5⁵

Cold—

Cold Chisels, good quality, lb. 15@15c

Cold Chisels, fair quality, lb. 11@12c

Cold Chisels, ordinary lb. 8@9c

Chucks—

Beach Pat, each \$8.00 20⁵

Massey's Planer and Milling 15@20⁵

Skinner Patent Chucks: Combination Lathe Chucks 40⁵

Drill Chucks, Patent and Standard 30⁵

Drill Chucks, New Model 2⁵

Independent Lathe Chucks 40⁵

Improved Planer Chucks 25⁵

Universal Lathe Chucks 40⁵

Face Plate Jaws 40⁵

Standard Tool Co.: Improved Drill Chuck 45⁵

Union Mfg. Co.: Combination 40⁵

Czar Drill 30⁵

Geared Scroll 30⁵

Independent 40⁵

Union Drill 30⁵

Universal 40⁵

Face Plate Jaws 35⁵

See also Chalk.

Creamery Pails— See Pails, Creamery.

Crooks, Shepherds'—

Fort Madison, Heavy \$1.00

Fort Madison, Light \$1.00

Crow Bars—See Bars, Crow.

Cultivators—

Victor Garden \$1.00

Clamps—

Adjustable, hammers 20@20d⁵
 Cabinet, Sargent's 50@20⁵
 Carriage Makers', P. S. & W. Co. 40@10⁵
 Carriage Makers' Sargent's 50@20⁵
 Heavy, Parallel 35@20⁵
 Lineman's, Utic Drop Forge & Tool Co. 40⁵

Saw Clamps, see Pliers, Saw Pliers.

Cleaners Sidewalk—

Star Socket, All Steel \$1.00 net
 Star Shank, All Steel \$1.00 net

W. & C. Stauffer, All steel, 7/8 in. 1/2 d.s.,

\$3.05; 8 in., \$3.10; 8 1/2 in., \$3.25.

Cleavers, Butchers'

Boster Bros. 30⁵

New Haven Edge Tool Co.'s 40⁵

Fayette R. Plumb 35@20⁵

F. S. & W. 50@50⁵

L. & J. White 35⁵

Clippers—

Chicago Flexible Shaft Company

Handy Toilet \$1.00 net

Mascotte Toilet \$1.00 net

Monitor Toilet \$1.00 net

Stewart's Patent \$1.00 net

Clips Axle—

Eagle and Superior 1/4 and 5-16

inch 70d⁵ @ 10¹⁰

Norway, 5/8 and 5-16 inch 70@70d¹⁰

Cloth and Netting, Wire—

—See Wire, &c.

Cocks, Brass—

Hardware list (Globe, Kerosene,

Racking, &c.) 65@10⁵

Coffee Mills— See Mills, Coffee.

Collars, Dog—

Brass, Pope & Stevens' list 40⁵

Embossed, Gilt, Pope & Stevens' list 30@30⁵

Leather Pope & Stevens' list 40⁵

Compasses Dividers, &c.

Ordinary Goods 70d⁵ @ 70¹⁰

Bemis & Call Hdw. & Tool Co.:

Dividers 65⁵

Callipers, Call's Patent Inside 55⁵

Callipers, Double 55⁵

Callipers, Inside or Outside 55⁵

Callipers, Wing 60⁵

Compasses 50⁵

J. Stevens A. & T. Co. 25&10⁵

Compressors Corn Shock—

J. B. Hughes' 25@25⁵

Conductor Pipe, Galva.—

L. C. L. at Dealers:

Territory. Not nested. Nested.

Eastern 70d²⁵ 70d⁵

Central 65@10⁵

Southern 65⁵

S. Western 60d¹⁰/4⁵

60d¹⁵/15⁵

Terms 25¢ for cash.

Jobbers receive extra 12½% on car-

loads loose, and extra 12½% on car-

loads crated.

See also Eave Troughs.

Coolers, Water—

Nos. 4

Laborator 4

8 gal. 6

Iceland 3

82.00 \$25.00 \$30.00 \$37.50

10 14 gal. 8

\$27.00 \$12.00

Coopers' Tools—

See Tools, Coopers'.

Cord—

Sash—

See also Compressors.

Coolers, Water—

Nos. 4

Laborator 4

8 gal. 6

Iceland 3

82.00 \$25.00 \$30.00 \$37.50

10 14 gal. 8

\$27.00 \$12.00

Cookers, Shepherds'—

Fort Madison, Heavy \$1.00

Fort Madison, Light \$1.00

Crow Bars— See Bars, Crow.

Cultivators—

Victor Garden \$1.00

See also Chalk.

Creamery Pails—

Creamery.

Crooks, Shepherds'—

Fort Madison, Heavy \$1.00

Fort Madison, Light \$1.00

Crow Bars— See Bars, Crow.

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Cultivators—

Victor Garden \$1.00

See also Chalk.

Creamery Pails—

Creamery.

Crooks, Shepherds'—

<div

Gates, Molasses and Oil-

See also Sugars and Oils

Gauges

Mark, Mortise, &c. \$5.00@5.50@10@10%

Gret's Comb, Roller Gauge \$6.75@7.34

Under R. & L. Co.'s Butt & Babbit 20.00@10%

Gates Brown & Sharpe's 25.00

Fire Horse's 35.00

Fire S. & W. Co. 30@31@10%

Ginlets

Gal. Metal, Assorted, gro. \$1.50@1.75

Gal. Metal, Assorted, gro. \$3.00@3.50

Gal. Wood Handled, Assorted, gro. \$4.00@4.25

Gal. Wood Handled, Assorted, gro. \$5.00@5.25

Glass, American Window

Jobbers' List, Jan. 21, 1901.

than Carloads 80@90%

plowds 85@95%

in Boxes 87%

Glue-Liquid, Fish-

in Bottles or Cans, with Brush 37%@50%

in Cans (1/2 pts., pts., qts.) 33%@48%

in Cans (1/2 gal., gal.) 25@45%

International Glue Co. (Martin's) 4@10@35%

Glue Pots—See Pots, Glue.**Grease, Axle—**

Common Grade, gro. \$5.00@6.00

Con's Everlasting, 10-lb pails, ea. 85.00

Con's Everlasting, in bxs, 8 oz. doz. 1 lb. 81.20; 2 lb. \$2.00

ew Flake: 8 oz. cans, per doz. \$2.00; 2 qt. \$3.20; 1/2 gal. cans, per doz. \$6.00; 8 gal. 16.00; 5 gal. \$34.00

Grindstones—

cycle Grindstones, each \$2.50@3.00

Mfg. Co. Approved Family Grindstones

per inch, per dozen \$2.00@3.00

the Mower Knife and Tool Grinder, each \$3.00

ax Ball Bearing, mounted, Angle Frames each, \$3.25

Guards, Snow—

Frend Wire Spring Co.

Steel W. 1000. \$9.00

Upper W. 1000. \$18.00

Gun Powder—See Powder.**Jack Saws—See Saws.****Jafts, Awl—**

gro.

Patent, Leather Top \$4.90@5.25

Patent, Plain Top \$3.50@3.75

ing, Brass Ferrule. \$1.50@1.60

iders', Brass Ferrule. \$1.50@1.45

Common \$1.25@1.35

ed, Common \$1.50@1.75

Halters and Ties—

Mfg. Co.

80 45@25

ope 45@25

al Halters 30@25

ro and Leather Halters 70.00

and Manila Rope Halters 70.00

ite, Manila and Cotton Rope Halters 60@25

al Hope Ties 60@25

Hammers—**Handled Hammers—**

er's Machinists 50@50@5%

er's Farriers 50@50@5%

eader Tack, No. 1, 2, 3, \$1.35, \$1.50

. 40@10@10

Stow & Wilcox. 50@10@10

Barb, Plumb, A. E. Nail. 40@10@7.50

miners' and B. S. Hand. 60@10@8.50

chimists' Hammers 60@10@8.50

eding and Tinniers' 40@10@7.50

nt's Cl. New List. 40@10@7.50

Heavy Hammers and Sledges—

and under 40@10@7.50

lb. 30.00@80@10@20

5 lb. 30.00@10@20

inson's Smiths' 34@10@10 lb.

Handcuffs and Leg Irons

See Police Goods.

Handles—**Agricultural Tool Handles—**

ick, dc 60@60@10%

ake, Fork, dc 60@60@10%

dc, Wood D Handle, 50@50@10%

Cross-Cut Saw Handles—

40@45@10%

on 50@10@10

assorted gro. \$2.50@2.50

Aci. gro. \$1.25@1.50

Handles:

Tanged Firmer, gro. as'd.

as'd. 32.50@32.50

cky Tanged Firmer, gro. as'd.

8.50@32.50; large, \$3.50@32.70

cky Firmer, gro. as'd.

1.70@31.85; large, \$2.00@32.25

cky Stoker Firmer, gro. as'd.

1.80@31.75; large, \$1.75@32.00

tang Firm Framing, gro. as'd.

3.50@32.75; large, \$2.65@32.85

assorted gro. \$1.00@1.15

mer, Hatchet, Axe, dc. 60@10@10

arished 55@60@10

cky Handles:

doz. 25c; Jack Bolted 50@60@10%

doz. 35@38c; Fore, Bolted 70@750

Handles—

Door, New Pattern, Round Groove, Regular:

. 3 4 5 6 8

. \$0.85 1.30 1.60 1.95 3.45

barn Door, New England Pattern, Check Back, Round Groove, Regular:**Inch:** 3 4 5 6**Doz.:** \$1.45 1.90 2.55 3.10**Chicago Spring Butt Co.:****Friction:** 25%**Oscillating:** 25%**Big Twin:** 25%**Baggage Car Door:** 50%**Elevator:** 40%**Railroad:** 55%**Cronk Hanger Co.:****Loose Axle:** 60%**Roller Bearing:** 60@10@10**Lane Bros.:****Parlor, Ball Bearing:** 34.00**Parlor, Standard:** 35.25**Parlor, New Model:** 37.50**Parlor, New Champion:** 32.25**Barn Door, Standard:** 40@10@10**Covered:** 50@10@10@20@25**Lawrence Bros.:** 60@10@10**Advance:** 60%**Cleveland:** 70%**Crown:** 60%**New York:** 60%**Pearlless:** 60@10@10**Sterling:** 60%**McKinley Mfg. Co.:****No. 1, Special S15:** 60@10@10**No. 2, Standard S15:** 60@10@10**Stowell Mfg. & Foundry Co.:****Acme Parlor Ball Bearing:** 40%**Atlas:** 50@10@10**Badger Barn Door:** 50%**Baggage Car Door:** 50%**Climax Anti-Friction:** 50%**Elevator:** 40%**Express:** 50%**Interstate:** 50@10@10**Lundy Parlor Door:** 50%**Hallroad:** 50%**Street Car Door:** 50%**Steel Nos. 300, 404, 500:** 40@10@10**Old Lid Test:** 5%**Zenith for Wood Track:** 50%**Taylor & Boggs Foundry Co.:****Columbian Hdw. Co.:****American Trackless:** 35@15@10@20@25**Wilcox Mfg. Co.:****Bike Roller Bearing:** 60@10@10**C. J. Roller Bearing:** 60@10@10**Cycle Ball Bearing:** 50%**Dwarf Ball Bearing:** 40%**Ives, Wood Track:** 60@10@10**L. T. Roller Bearing:** 60@10@10@5%**O. K. Roller Bearing:** 60@10@10@5%**Prindle, Wood Track:** 60%**Richards' Steel Track:** 60@10@10**Spencer Roller Bearing:** 60@10@10**Tandem Nos. 1 and 2:** 60%**Underwriters' Roller Bearing:** 40%**New Era Roller Bearing:** 50@10@10**Extra Heavy T Hinges:** 75@10@10**Hinge Hasps:** 60%**Cor. Heavy Strap:** 80%**Cor. Ex. Heavy T:** 75@10@10**Heavy T Hinges:** 65@10@10**Screen Hook:** 6 to 12 in. 60@10@10**and Strap:** 22 to 36 in. 24@12@12**Screen Hook and Eye:** 6 to 1 in. 60@10@10**lb. 5 c:** 60@10@10**lb. 6 c:** 60@10@10**lb. 7 c:** 60@10@10**Miscellaneous:****Hoffman's Steel Spring Butt Hinges:** 40@10@10**Hoffman's Offset Refrigerator Hinges:** 40@10@10**Hornet's List:** 15.00@15.00@15.00**Hornet's List, Mar. 15, 1901:****Light Strap Hinges:** 75%**Heavy Strap Hinges:** 80%**Light T Hinges:** 70%**Heavy T Hinges:** 65@10@10**Extra Heavy T Hinges:** 75@10@10**Extra:** 20@25%**Hinges only:** \$1.30 1.70 2.90**Latches only:** 65 65 95**With a latch:** 65@10@10**Without a latch:** 60@10@10**Reversible Self-Closing:** 65@10@10**With a latch:** 65@10@10**Without a latch:** 60@10@10**Western:** 65@10@10**With a latch:** 65@10@10**Without a latch:** 60@10@10**Reversible:** 65@10@10**With a latch:** 65@10@10**Without a latch:** 60@10@10**With a latch:** 65@10@10**Without a latch:** 60@10@10**With a latch:** 65@10@10**Without a latch:** 60@10@10**With a latch:** 65@10@10**Without a latch:** 60@10@10**With a latch:** 65@10@10**Without a latch:** 60@10@10**With a latch:** 65@10@10**Without a latch:** 60@10@10**With a latch:** 65@10@10**Without a latch:** 60@10@10**With a latch:** 65@10@10**Without a latch:** 60@10@10**With a latch:** 65@10@10**Without a latch:** 60@10@10**With a latch:** 65@10@10**Without a latch:** 60@10@10**With a**

July 11, 1901

Ladies—Melting—	
L. & G. Mfg. Co.	255
P. S. & W.	40@40@105
Reading	50@105
Sargent's	40@40@105
Lanterns—Tubular—	
Regular Tubular	doz. \$4.50@5.00
Side Lift Tubular	doz. \$4.75@5.25
Square Lift Tubular	doz. \$4.75@5.25
Other Styles	10@10@40@105
Bull's Eye Police—	
No. 1, 2½ inch	\$3.80
No. 2, 3 inch	\$4.00
Latches, Thumb—	
Roggins' Latches	doz. \$2@50
Lawn Mowers—	
See Mowers, Lawn.	
Leaders Cattle—	
Small	doz. 50c; large, 50c
Covert Mfg. Co.	45@25
Lemon Squeezers—	
See Squeezers, Lemon.	
Lifters, Transom—	
Solid grip, Payson Mfg. Co.	80c
R. E.	45c
Lines—	
Wire Clothes, Nos. 18 19 20	100 feet \$2.20 \$2.00 1.65
75 feet	\$1.80 1.70 1.80
Ossipee Mill	
Crown Solid Braided Chalk	33@45
Mason's, No. 0 to No. 5	33@45
Bamboo Cordage Works	
Solid Braided Chalk, No. 0 to 3	10c
Silver Lake Braided Chalk, No. 0, \$0.00;	No. 1, \$0.50; No. 2, \$0.75; No. 3, \$1.00
Locks—Cabinet—	
Cabinet Locks	33@50@75@105
Door Locks, Latches, &c.—	
[Net prices are very often made on these goods]	
Reading Hardware Co.	40c
R. E. Mfg. Co.	50c
Sargent & Co.	40@40@105
Elevator—	
Stowell's	33@45
Padlocks—	
Wrought Iron	75@10@80c
R. E. Mfg. Co. Wrt. Steel and Brass	50c
Sash, &c.—	
Fitch's:	
Bronze and Brass	66@44
Iron	70c
Ives' Patent:	
Bronze and Brass	62@44
Iron	65c
Wrought Bronze and Brass	55@55
Wrought Steel	60c
Paxton's Signal	90c
Reading	60@10@10@75c
Machines—Boring—	
Without Augers.	
Upright. Angular.	
Improved No. 3. \$4.25	No. 1 \$5.00
Improved No. 4. 5.75	No. 2. 3.38
Improved No. 5. 7.75	
Jennings	2.50 3.00
Miller's Falls	5.75
Snell's, Rice's Pat.	2.50 2.75
Swan's, No. 500. 5.10	No. 200 6.45
Holisting—	
Moore's Anti-Friction Differential Pulley Block	90c
Moore's Hand Hoist, with Lock Brake	90c
Moore's Portable Pneumatic Hoist	25c
Ice Cutting—	
Chandler's	15c
Washing—	
Wayne American	per doz. \$28.00
Western Star, No. 2	per doz. 28.00
Western Star, No. 3	per doz. 30.00
St. Louis, No. 41	per doz. 30.00
Mallets—	
Hickory	46@5@50%
Lignumvita	46@5@50%
Tinners' Hickory and Applewood	doz. 50@55c
Mats—Door—	
Elastic Steel (W. G. Co.)	10c
Mattocks—	
See Picks and Mattocks.	
Meat Cutters—	
See Cutters, Meat.	
Milk Cans—See Cans, Milk	
Mills—Coffee—	
Enterprise Mfg. Co.	25@30c
National, list Jan. 1, '04	30c
Parker's Columbia and Victor	50@10@60c
Parker's Box and Side	50@10@60c
Swift, Lane Bros.	30c
Mincing Knives—	
See Knives, Mincing.	
Molasses Gates—	
See Gates, Molasses.	
Money Drawers—	
See Drawers, Money.	
Mowers, Lawn—	
Net prices are generally quoted.	
Cheap	all sizes, \$1.50@2.10
Good	all sizes, \$2.50@3.75
High Grade	4.25 4.50 4.75 5.00
Continental	60@10@5%
Great American	70@8@5%
Great American Ball Bearing	60@10@5%
Quaker City	70@8@5%
Pennsylvania	60@10@5%
Pennsylvania Golf	50c
Pennsylvania Horse	40c
Pennsylvania Pony	45c
Philadelphia:	
Styles M., S. C., K. T.	70@5c
Style A, all Steel	50@10c
Style E, Low Wheel	60@10c
Style E, High Wheel	70@10@5%
Drexel and Gold Coin, low list	50@5%
Nails—	
Cut and Wire. See Trade Report.	
Wire Nail and Brads, Papered.	
List July 10, 1899	85@10c
Hungarian, Finishing, Upholsterers, &c. See Tacks.	
Horse—	
Nos. 6 7 8 9 10	
A. C. 25¢ 23¢ 22¢ 21¢ 21¢ ... 40@25c	
Ausable 25¢ 23¢ 22¢ 21¢ 21¢ ... 50@10c	
Capewell, 19¢ 18¢ 17¢ 16¢ 16¢ ... 10@25c	
C. B. K. 25¢ 25¢ 22¢ 21¢ 21¢ ... 40@10@25c	
Champlin 25¢ 26¢ 25¢ 24¢ 23¢ ... 30@10@25c	
Clinton, 19¢ 17¢ 16¢ 15¢ 14¢ ... 40@10@25c	
Maud S. 25¢ 23¢ 22¢ 21¢ 21¢ ... 50c	
Neponset, 23¢ 21¢ 20¢ 19¢ 18¢ ... 40@10@25c	
Putnam, 23¢ 21¢ 20¢ 19¢ 18¢ ... 33@10c	
American, Nos. 5 to 10 10¢ 10¢ 10¢ 10¢ 10¢ ... 96@9c	
Jobbers' special brands... per lb. 8@9c	
Picture—	
1½ 2 2½ 3 3½ in.	
Brass Head. 60 60 70 95 100 gro.	
Por. Head.... 1.10 1.10 1.10 ... gro.	
Nippers, See Pliers and Nippers.	
Nut Crackers—	
see Crackers.	
Nuts—	
Cold Funched	Off
Mfrs. or U. S. Standard. list.	
Hexagon, plain	5.80c
Square, plain	5.40c
C. T. & R.	5.60c
Hexagon, C. T. & R.	5.80c
Hot Pressed:	
Mfrs. U. S. or Nar. Gauge Stan'd.	
Square Blank or Tapped	5.60c
Hexagon Blank or Tap'd.	5.80c
Oakum—	
Best or Government	lb. 64c
Navy	lb. 5 c
U. S. Navy	lb. 54c
Plumbers' Spun Oakum	54c
In carload lots 34c lb. off f.o.b. New York	
Oil, Axe—	
Snow Flake:	
1 pt. cans, per doz.	88.00
1 qt. cans, per doz.	84.80
1 gal. cans, per doz.	81.50
5 gal. cans, per doz.	80.00
Oil Tanks—See Tanks, Oil.	
Oilers—	
Brass and Copper	40@10@50c
Tin or Steel	60@10@55c
Zinc	60@10@55c
Paragon:	
Brass and Copper	60@10@50c
Tin or Steel	60@10@50c
Zinc	60@10@50c
Malleable Hammers Improved, No. 1	\$2.50; No. 2, 4¢; No. 3, 4.40 off doz. 20¢
Malleable Hammers' Old Pattern, same list	50@10@50c
Wilmet & Hobbs' Mfg. Co.:	
Spring Bottom Cans	70@7@10@80c
Railroad Oilers etc.	60@60@105
Openers—Can—	
French	per doz. 35c
Iron Handle	doz. 25@27c
Sprague, Iron Hdl.	per doz. 36@40c
Sardine Scissors	doz. 31.75@33.00
Tip Top	per doz. 30.75
National, 9 gro.	per doz. 40@45c
Stowell's	per doz. 40@45c
Waldorf, 9 gro.	38@5c
Egg—	
Nickel Plate	per doz. 82.25
Silver Plate	per doz. 83.50
Packing—	
Asbestos Packing, Wick and Rope,	15c lb.
Rubber—	
Sheet, C. I.	8@15c
Sheet, O. O. S.	10@15c
Sheet, C. B. S.	10@14c
Sheet, Pure Gum	60@70c
Sheet, Red	36@60c
Jenkins' Standard, F. & S. 80c	35@25c
Miscellaneous—	
American Packing	9@100 lb.
Cotton Packing	15@140 lb.
Italian Packing	10@1140 lb.
Jute	34@5c lb.
Russia Packing	12@130 lb.
Pails—	
Creamery—	
S. R. & Co., with gauges. No. 1 \$0.50; No. 2, \$0.75	doz. 10@10@105
Galvanized—	
Price per gro.	
Quart.... 10 12 14	
Water, Regular	18.00 21.00 24.00
Water, Heavy	24.00 27.00 30.00
Fire, Rd. Bottom	21.00 23.00 25.00
Well	27.00 29.00 31.00
Fry—	
Common Lipped	No. 1 2 3 4 5
Per doz.	20.00 17.50 15.50 12.50 11.50
Roasting and Baking—	
Royal S. S. & Co., 9 gro. Nos. 5-10, 50c@10c	
10-12, 50c@10c	
13-15, 50c@10c	
16-18, 50c@10c	
19-21, 50c@10c	
22-24, 50c@10c	
25-27, 50c@10c	
28-30, 50c@10c	
31-33, 50c@10c	
34-36, 50c@10c	
Building Paper—	
Asbestos:	lb.
Building Felt	Sc.
Mill Board, sheet, 40 x 40 inches	Sc.
Mill Board, roll, thicker than 1-16 inch	c.
Mill Board, roll, 1-16 in. thick and less	Sc.
Deafening Felt, 9, 6 and 14 sq. ft.	
to lb. ton	\$36.00@37.00
Red Rope Roofing, 250 sq. feet per roll	\$1.65
Tarred Paper.	
1 ply (roll 300 sq. ft.), ton.	\$20.00@27.00
2 ply, roll 105 sq. ft.	50c
3 ply, roll 108 sq. ft.	70c
Slater's Felt (roll 500 sq. ft.), 50¢/doz.	50c
R. H. M. Stone Surfaced roofing (rol. 110 sq. ft.)	12.75
Sand and Emery—	
List Dec. 23, 1899	50c@60c@10c@105
Parers—Apple—	
Advance	per doz. \$4.50
Baldwin	per doz. 85.00
Bonanza	each 55.00
Dandy	each 67.50
Eureka, 1998	each 81.00
Family Bay State	per doz. \$12.00
Hudson's Little Star	per doz. \$12.00
Hudson's Rocking Table	per doz. \$3.50
Improved Bay State	per doz. \$27.00@30.00
New Lightning	per doz. \$5.50
Reading 72	per doz. \$4.00
Reading 78	per doz. \$7.00
Turn Table '98	per doz. \$5.50
White Mountain	per doz. \$4.00
Potato—	
Saratoga	per doz. 85.50
White Mountain	per doz. 84.50
Paris Green—	
In Arsenic keys or casks	12½c
In kegs, 100 to 175 lbs.	15 c
In kits, 1b. 28, 56 lbs.	14 c
In paper boxes, 2 to 5 lbs.	14 c
In paper boxes, 1 lb.	14½c
In paper boxes, 14 lb.	15½c
In paper boxes, 14 lb.	16½c
Picks and Mattocks—	
List Feb. 23, 1899	70c@10@70c@105@55c
Pinking Irons—	
See Irons, Pinking.	
Pins—Escutcheon—	
Brass	60c
Iron, list Nov. 11, '95	60c
Pipe, Cast Iron Soil—	
Factory Shipments—Carload lots.	
Standard, 2-6 in.	60@55c
Extra Heavy, 2-6 in.	70@10c
Fittings	75@10c@105c
Note—Freight allowed on Carload lots.	
Pipe, Merchant, Boiler	
Brass	60c
Iron	60c
Oil	60c
Pipes, Cast Iron Sill—	
Factory Shipments—Carload lots.	
Standard, 2-6 in.	60@55c
Extra Heavy, 2-6 in.	70@10c
Fittings	75@10c@105c
Pipe, Merchant, Boiler	
Brass	60c
Iron	60c
Tubes, &c.—	
Less than Carloads to Consumers.	
Merchant Pipe.	
Black	Galvanized
14 to 1½ inch	61c
14 to 1½ inch	63c
2 to 10 inch	68½c
Boiler Tubes	Up to 22 feet.
1 to 1½ inch and 2½ to 5 inch inclusive	65½c
2 to 2½ inch, inclusive	60c
6 to 10 inches	59c
1 to 1½ inch and 1½ in.	13½c
1½ to 2½ in.	13½c
2 to 3½ in.	13½c
3 to 4½ in.	13½c
4 to 5½ in.	13½c
5 to 6½ in.	13½c
6 to 7½ in.	13½c
7 to 8½ in.	13½c
8 to 9½ in.	13½c
9 to 10½ in.	13½c
10 to 11½ in.	13½c
11 to 12½ in.	13½c
12 to 13½ in.	13½c
13 to 14½ in.	13½c
14 to 15½ in.	13½c
15 to 16½ in.	13½c
16 to 17½ in.	13½c
17 to 18½ in.	13½c
18 to 19½ in.	13½c
19 to 20½ in.	13½c
20 to 21½ in.	13½c
21 to 22½ in.	13½c
22 to 23½ in.	13½c
23 to 24½ in.	13½c
24 to 25½ in.	13½c
25 to 26½ in.	13½c
26 to 27½ in.	13½c
27 to 28½ in.	13½c
28 to 29½ in.	13½c
29 to 30½ in.	13½c
30 to 31½ in.	13½c
31 to 32½ in.	13½c
32 to 33½ in.	13½c
33 to 34½ in.	13½c
34 to 35½ in.	13½c
35 to 36½ in.	13½c
36 to 37½ in.	13½c
37 to 38½ in.	13½c
38 to 39½ in.	13½c
39 to 40½ in.	13½c
40 to 41½ in.	13½c
41 to 42½ in.	13½c
42 to 43½ in.	13½c
43 to 44½ in.	13½c
44 to 45½ in.	13½c
45 to 46½ in.	13½c
46 to 47½ in.	13½c
47 to 48½ in.	13½c
48 to 49½ in.	13½c
49 to 50½ in.	13½c
50 to 51½ in.	13½c
51 to 52½ in.	13½c
52 to 53½ in.	13½c
53 to 54½ in.	13½c
54 to 55½ in.	13½c
55 to 56½ in.	13½c
56 to 57½ in.	13½c
57 to 58½ in.	13½c

Washers—**Leather, Axle—**

Solid..... 35@85¢
Patent..... 35¢
1 1/8 1 1/4 Inch.
100 1 1/8 1 1/4 per
doz. 10c per 100

Iron or Steel—

Nuts..... 5-18 3/8 3/4 3/8 3/4
Washers..... 55¢
2.50 5.00 2.50 5.00
lots less than one keg add 1/4c per
lb., doz. boxes add 1/4c to list.

Cast Washers—

Over 1/2 inch, barrel lots per lb..... 1 1/4@1 1/4c

Washer Cutters—

See Cutters, Washer.

Washing Machines—

See Machines, Washing.

Water Coolers—

See Coolers, Water.

Wedges—

Oil Finish..... lb. 2.90@3.10c
Per ton, f.o.b. factory..... \$19.00@22.50
Some Foundries make price \$1@33
per cwt.

Weights, Sash—

Per ton, f.o.b. factory..... \$19.00@22.50
Some Foundries make price \$1@33
per cwt.

Well Buckets, Galvanized

See Pails, Galvanized.

Wheels Well—

8-in., \$1.65@1.75; 10-in., \$2.00@2.10;
12-in., \$2.50@2.75; 14-in., \$4.25@4.40

Wire and Wire Goods—

Brt. and Ann., 6 to 9.70¢@10@70&10¢
Brt. and Ann., 10 to 18.73¢@75¢@10¢
Brt. and Ann., 19 to 36.75¢@75¢@10¢
Brt. and Ann., 27 to 36.

47.5¢@10@75¢@10¢@5¢

Cop'd and Galv., 6 to 9.... 70¢@70¢@5¢

Cop'd and Galv., 10 to 13.... 70¢@70¢@5¢

Cop'd and Galv., 19 to 26.... 70¢@70¢@5¢

Cop'd and Galv., 27 to 36.... 75¢@75¢@5¢

Tinned, 6 to 14.... 75¢@75¢@5¢

Tinned, 15 to 18.... 70¢@70¢@10¢

Tinned, 19 to 26.... 70¢@70¢@5¢

Tinned, 27 to 36.... 65¢@10@70¢

Annealed Wire on Spools. 70¢@70¢

10¢@10¢

Brass and Copper Wire on Spools.... 80¢@5@10¢

Brass, list Feb. 26, '98.... 25¢

Copper, list Feb. 26, '98..... 15¢

Cast Steel Wire..... 50¢

Stubs' Steel Wire..... 60¢ to 2.40¢

Wire Clothes Line, see Lines.

Wire Picture Cord, see Cord.

Bright Wire Goods—

List April 1, 1901..... 85¢@10@...¢

Wire Cloth and Netting—

Galvanized Wire Netting.... 35@85¢@5¢

Painted Screen Cloth per 100 ft....

\$1.00@1.10

Light Hardware Grade:

8-12 Mesh, Plain (sc. list) sq. ft....

1 1/4@14¢

2-18 Mesh, Galv. (sc. list) sq. ft....

2 1/4@3¢

Wire Barb— See Trade Report.**Wire, Rope—** See Rope, Wire.**Wrenches—**

Agricultural..... 70¢@10@75¢@5¢

Case lots..... 75¢@10¢

Acme..... 60@10¢

Alligator..... 70¢

Bartex's S..... 60@10¢

Bull Dog..... 70¢

Bemis & Call's:

Adjustable S..... 35@5¢

Adjustable S Pipe..... 40¢

Brigg's Pattern..... 30@10¢

Combination Black..... 40¢@5¢

Combination Bright..... 40¢

Cylinder or Gas Pipe..... 55¢

Extra Heavy..... 45¢

Merrick's Pattern..... 50¢

No. 3 Pipe, Bright..... 55¢

Bindley Automatic..... 30¢

Boardman's..... 35¢

Coes' Genuine..... 40@10@10¢@5¢

Coes' "Mechanics"..... 40@10@10¢@5¢

Donohue's Engineer..... 40@10@10¢@5¢

Eagle..... 50@10¢

Gem Pocket..... 30¢

Hercules..... 70¢

Knife Handle, Machinists' (W. & B.).....

Case lots..... 50@10¢

Less than case lots..... 50@5¢

Improved Pipe (W. & B.)..... 60¢

Solid Handles, P. S. & W..... 50@50@10¢

Triumph..... 60@10¢

Wrought Goods—

Staples, Hooks, etc., list March 17

'92..... 85¢@25@90¢

Yokes, Neck—

Covert Saddlery Works, Trimble's, 1.00@5¢

Covert Saddlery Works, Neck Yoke

Centers..... 70¢

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers & Freighters'..

list net

Zinc—

Sheet..... lb. 6 1/2¢@7¢

PAINTS, OILS AND COLORS.—Wholesale Prices!**White Lead, Zinc, &c.**

Foreign white, in Oil..... 7 1/2@9¢

American White, in Oil:.....

Lots of 500 lb. or over..... 8@9¢

Lots less than 500 lb. 8@7¢

Red, White, in oil, 25 lb. tin

pails, add to keg price..... 8@4¢

Red, White, in oil, 12 1/4 lb. tin

pails, add to keg price..... 8@1¢

Red, White, in oil, 1 to 5 lb. as

sorted tins, add to keg price..... 8@1¢

Red, White, Dry in pails..... 5 1/2@6¢

American Terms: On lots of 500

lb. and over, 60 days, or 9% for cash if

paid in 15 days from date of invoice.

Red, American, dry..... 8@4 1/2¢@4¢

Orange Mineral, French..... 11 1/2@11¢

Orange Mineral, American..... 8@8¢

Red, Indian, English..... 4 1/2@5¢

Red, Turkey, English..... 4@3¢

Red, Tuscan, English..... 7@10¢

Red, Venetian, Amer. 100 lb. 80@1.75

Red Venetian, English, \$160 lb. 1.80@3.00

Antwerp, Red Seal, dry..... 8@5¢

Antwerp, Green Seal, dry..... 8@5¢

V. M. French, in Poppy Oil,

Green Seal:

Lots of 1 ton and over..... 12@12¢

Lots less than 1 ton..... 12 1/2@12¢

Discounts.—V. M. French Zinc.—Dis

counts to buyers of 16 bbls. lots of one or

sorted grades, 1%; 25 bbls. 2%; 50

5%; 400 bbls. 5%.

Dry Colors.

Black, Carbon..... 8@20¢

Black, Drop, Amer..... 4@7¢

Black, Drop, Eng..... 7@11¢

Black, Ivory..... 12@21¢

Black, Lampblack..... 12@21¢

Black, Celestial..... 8@24¢

Blue, Prussian..... 8@6¢

Blue, Chinese..... 30@35¢

Blue, Prussian..... 28@34¢

Blue, Ultramarine..... 4@20¢

Blue, Spanish..... 16@1

Blue, Vandyke, Amer..... 13 1/2@24¢

Blue, Vandyke, Foreign..... 24@34¢

Blue, Chrome, No. 40..... 8@32.00@3.75

Blue, Chrome, ordinary..... 5@6¢

Green, Chrome, pure..... 18@20¢

Lead, Red, bbls., 1/2 bbls. and kegs:

Lots 500 lb. or over..... 8@6¢

Lots less than 500 lb. 8@4¢

Litharge, bbls., 1/2 bbls. and kegs:

Lots 500 lb. or over..... 8@6¢

Lots less than 500 lb. 8@4¢

Lead, White, in oil, 25 lb. tin

pails, add to keg price..... 8@4¢

Lead, White, in oil, 1 to 5 lb. as

sorted tins, add to keg price..... 8@1¢

Lead, White, Dry in bbls..... 5 1/2@6¢

American Terms: On lots of 500

lb. and over, 60 days, or 9% for cash if

paid in 15 days from date of invoice.

Lead, Indian, English..... 4 1/2@5¢

Lead, Turkey, English..... 4@3¢

Lead, Tuscan, English..... 7@10¢

Lead, Venetian, Amer. 100 lb. 80@1.75

Lead, Venetian, English, \$160 lb. 1.80@3.00

Lead, Prussian, English, Import..... 8@93¢

Lead, Prussian, Chinese..... \$1.05@2.10¢

Colors in Oil.

Black, Lampblack..... 12@14¢

Blue, Chinese..... 36@40¢

Blue, Prussian..... 92@38¢

Blue, Ultramarine..... 13@18¢

Brown, Vandyke..... 9 1/2@13¢

Green, Chrome..... 10@12¢

Green, Paris..... 10@13¢

Sienna, Raw..... 10@13¢

Sienna, Burnt..... 10@13¢

Umber, Raw..... 9 1/2@12¢

Umber, Burnt..... 9 1/2@13¢

Miscellaneous.

Barytes, Foreign, 8-ton..... 19.00@21.00

Barytes, Amer. floated..... 19.00@20.00

Barytes, Crude, No. 1..... 9.00@10.00

Chalk, in bulk..... 2 1/2@2.75

Chalk, in bbls..... 100 lb. 35¢

China Clay, English, 8-ton..... 12.00@17.50

Cobalt, Oxide, 8-ton..... 2.20@2.50

Whiting, Common, 100 lb. 40¢@60¢

Whiting, Gilders..... 45¢@65¢

Whiting, extra Gilders..... 55¢@95¢

Putty.

In bulk..... 1.25@2.25

In bladders..... 2.25

In cans, 12 lb. to 25 lb. 2.25

In cans, 1 lb. to 5 lb. 3.25

Spirits Turpentine.

In Southern bbls..... 37@37¢@38¢

In machine bbls..... 37¢@38¢

Glue.

Low Grade..... 9@12¢

Cabinet..... 11@15¢

Medium White..... 14@16¢

Extra White..... 18@23¢

French..... 12@40¢

Irish..... 13@16¢

Animal, Fish and Vegetable Oils.

Linseed, City, raw..... 8¢@83¢

Mineral Oils.

Black, 20 gravity, 25@30 cold test.

Black, 29 gravity, 15 cold test. 10¢@10¢

Black, summer..... 8¢@8¢

Cylinder, light filtered..... 14@17¢

Cylinder, dark filtered..... 11@15¢

Paraffine, 903-907 gravity..... 12@13¢

Paraffine, 908 gravity..... 9@11¢

Paraffine, 883 gravity..... 9@10¢

Paraffine, red, No. 1..... 12@12¢

In small lots 1/2¢ advance.

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades,

and a standard authority on all matters relating to those branches of industry.

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